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REAR ADM. W. DANA  
(MC), U. S. Navy

*Editor:*

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U. S. Army, Ret.

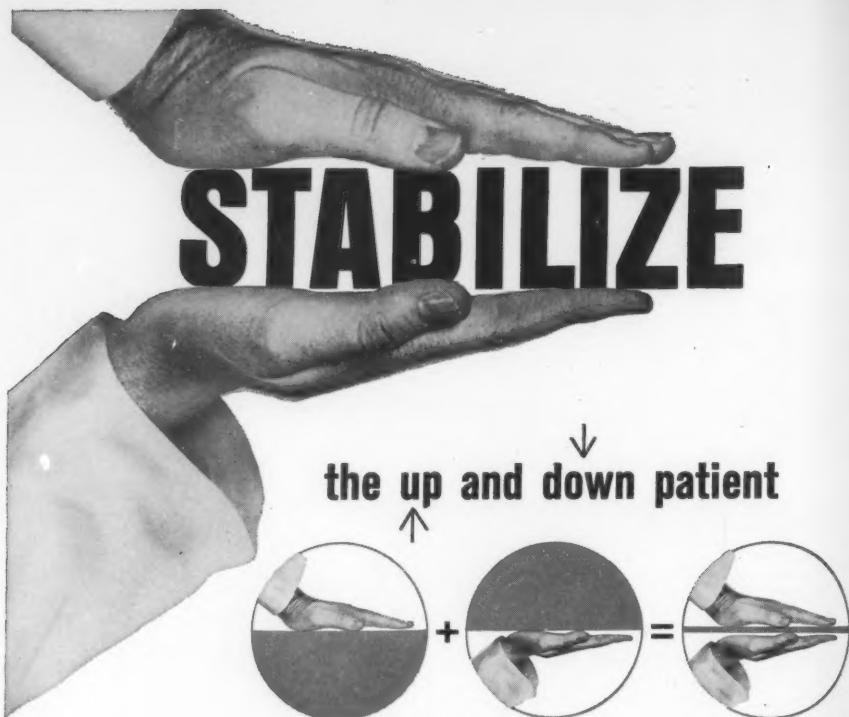
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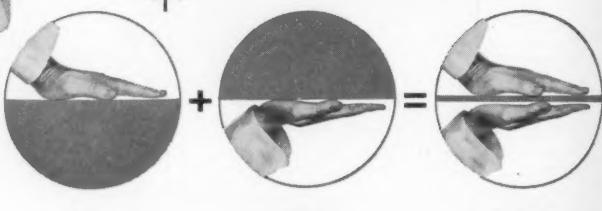
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1. Arnoch, B.: Personal communication. 2. Lazarte, J. A., and Petersen, M. C.: Personal communication.  
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## MILITARY MEDICINE

## ORIGINAL ARTICLES

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## Operation Stratomouse

*With the Help of the Army and Navy, the Air Force Probes the Sky with  
Giant Balloons to Test Cosmic Ray Hazards in Stratosphere Travel*

*A Balloon's Voyage Can be as Unpredictable as a Tornado's Course*

By  
WEBB HAYMAKER, M.D.

During the summer of 1955, the Air Force's Aero Medical Field Laboratory, Holloman Air Development Center, New Mexico, undertook a balloon flight expedition to determine whether "primary" cosmic rays present a hazard to future travellers in the upper stratosphere. International Falls, Minnesota, on the Canadian border, was chosen as the site of the balloon launchings because the cosmic rays coming from outer space penetrate the earth's atmosphere farther in this region than at more southerly latitudes. Mice were the passengers on the particular flights dealt with in the story that follows.

Winzen Research Inc., of Minneapolis, was the contractor selected by the Air Force to build the balloons, provide the airborne instrumentation, and conduct the flight operations. To reach the record height desired it was necessary to develop a giant new balloon of over 2,000,000 cubic foot volume. The Navy furnished the necessary helium. For the tracking of the balloons, the Air Force provided a C-47 plane which, with the Winzen planes, pursued the balloons whence the stratospheric winds carried them—often as far as 1,000 miles from the launching site. Ground tracking was carried out by means of a radio truck which the Navy entrusts to Winzen Research for their balloon flights under Project "Skyhook." The Air Defense Command at Duluth stood ready to dispatch a rescue helicopter if needed. The expedition was an outstanding example of interservice-contractor collaboration in achieving the research goals of our Armed Forces.



Webb Haymaker, M.D.

Participating in the experiments were numerous scientists, among them Dr. Webb Haymaker, Chief of the Neuropathology Section, Armed Forces Institute of Pathology, Washington, D.C. In the

story that follows, he lays bare the thinking behind the animal experimentation. He also provides a running account of the personal characteristics of today's two great balloon impresarios, Mr. Otto Winzen and Major David G. Simons, USAF (MC), and captures for the reader the tense moments connected with balloon launching and balloon pursuit.

**T**HE plane touched ground at International Falls, Minnesota, exactly on schedule—11:45 P.M.—and came to a halt in front of our brightly lit Headquarters, Einarsen's Flying Service Station. Out jumped Otto Winzen, back after launching a Navy "Skyhook" balloon from St. Paul, and with quick steps soon reached Major Simons, who was waiting to greet him.

"How does the weather look for the launching tomorrow at daybreak?" Winzen inquired.

"I just heard that a cold front has been located about 50 miles to the northwest of us, but it's stationary. There's also a low pressure area building up in the southwest, in the Thief River Falls region. Let's talk to the weather people again and see if there's anything new."

Preparations for a balloon flight being an all-night affair, Winzen and Simons had soon to decide whether the crewmen should be given the go-ahead signal, or be told to call it a day. As Winzen and Simons disappeared into the darkness in the direction of the weather station, the small knots of crewmen standing in front of Headquarters gazed intently at the skies and at the "wind sock" and anemometer on top the nearby hangar and volunteered their personal forecasts. The scene around them was at least that of potential action. Over to the other side of the hangar, with windows still dark, were the shiny aluminum laboratory and radio vans which had come as a caravan across country from Holloman Air Force Base, New Mexico, under the leadership of Major Simons. Near them one could make out the low hulks of the two Navy helium trucks. Along the runway, as though on a scrimmage line, were the Air Force C-47, the twin Beechcraft, the little Navion, the

low-slung Seabee amphibian, and the GI Pipers and Aeroncas—some waiting to follow the scent of the balloons once they had headed for the stratosphere, and the others standing by to take to the air in case of an emergency. Among them were assorted jaunty planes which had landed for their last refueling preparatory to heading north into the Canadian wilderness.

The men sensed that a break in the weather news was at hand when Francis Einarsen, owner of the Service Station, voluble oracle on all matters pertaining to the out-of-doors, emerged from Headquarters. A square-faced, tall, muscular Icelander, with a shock of blond hair bouncing down over his eyes as he spoke, Einarsen said that the cold front near Winnipeg was beginning to move southward. Having an audience, he was soon relating how he had shot timber wolves from his Piper Cub in the Lake-of-the-Woods region the previous winter. "Had to land on the snow and pick up the wolves so that I could bring them back for the thirty-five dollar bounty," he was saying when interrupted by the arrival of Winzen and Simons.

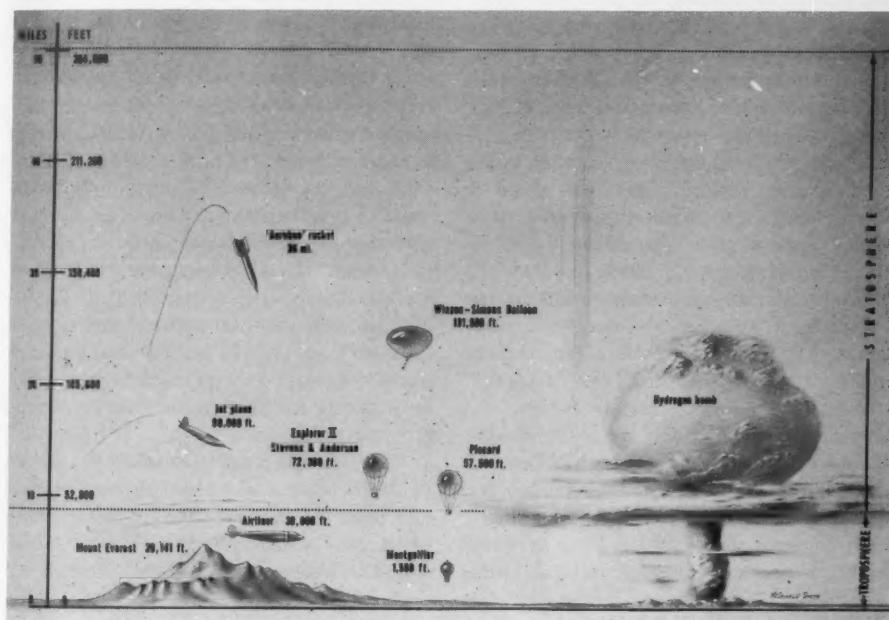
"Doesn't look good at all," said Winzen. "The forecast is for surface winds up to 12 miles an hour at daybreak. We called St. Cloud for verification and their prediction was the same. A 15-mile gust would rip a hole in our balloon. I'd take a chance, but we won't have another balloon ready for two or three days. Let's go home and 'sackin'."

And so another day was lost. The season was getting on, and the days favorable for flying were fast dwindling. Before our arrival there had been several successful flights—for the University of Wisconsin, the Atomic Energy Commission's National Argonne Laboratory, Brown University, the National Institutes of Health, and the University of Zürich, Switzerland—with the cargoes consisting of monkeys, mice, guinea pigs, Artemia (shrimp) eggs, radish seeds and corn, and cosmic ray photographic plates. Our flights were all that remained. Three were planned. The first balloon was

to take aloft a full complement of mice which were to be observed throughout their lives to determine whether cosmic rays had any long range biological effect. The second was to be concerned with a short-term experiment: the mice were to be sacrificed during the first two days following the termination of the flight, and their brains studied by techniques of revealing fresh damage by cosmic rays. The third flight

of destroyed cells. Some of the cultures would then be immersed in a solution which would make them suitable for subsequent microscopic study, while the others would be kept alive through several generations and observed for genetic alterations.

To ensure safe passage for this precious cargo, a C-47 had droned its way from International Falls to Galveston to pick up Dr. Walter Hild and the cultures which he



Drawing by McDonald Smith, AFIP

FIG. 1. Record altitudes reached by balloons carrying men or animals, including records set by the jet plane and by an animal-carrying "Aerobee" rocket.

would be devoted to a study of an inbred species of mouse which was likely to develop leukemia if exposed to a sufficient concentration of the radiation given off by cosmic rays.

On two of these flights some carefully nurtured living cells in tissue culture would be taken along—culture from a monkey's brain, from a mouse's kidney, and from cancer tissue removed from a human being. All the cultures would be searched immediately on termination of the flight for groups

had grown in Dr. Charles Pomerat's laboratory at the University of Texas School of Medicine. Then it had proceeded to Washington, D.C. to take aboard the mice which Lt. Irwin Lebish, VC, and I had selected at the Armed Forces Institute of Pathology. On reaching International Falls, we found the other members of our team already on hand—Dr. Herman Yagoda, cosmic ray physicist from the National Institutes of Health, Bethesda; the renowned publisher, Charles Thomas, to whom radiation prob-

lems are an avocation; and my son Dick, who was there as handyman.

These forthcoming flights were the culmination of many months of research carried on at the Holloman Air Development Center in New Mexico as part of the Air Research and Development Command medical research program. One problem had been to devise a gondola which would carry animals in the stratosphere for as long as 36 hours and bring them back alive. Whether the myriad cosmic rays penetrating the stratosphere were injurious was a question still to be settled. The Air Force wanted to know if cosmic rays presented any hazard to air crews flying on very high altitude missions, and scientists engaged in the earth-satellite program, thinking ahead to space travel, were wondering whether protection from cosmic rays needed to be included in their plans.

Conditions for launching continued unfavorable. It was always the "next day" which was to be propitious. Even when at midnight the forecast was for "marginal" weather, the gondola would be packed with animals; and inevitably around 4:00 A.M. the verdict would be the same: "Let's unpack and go back to bed." There was one windless and cloudless morning perfect for getting a balloon into the air, but we remained grounded by a 150-mile-an-hour jet stream of wind at 50,000 feet, which the weather station had detected with its radar instruments. A chance might have been taken had we not remembered how last year at Sault Ste. Marie, Michigan, one of our balloons had risen into such a stream and been sliced in half by the wind as though by a razor, with the gondola and all the rest of the gear plummeting into the inaccessible wilderness of Drummond Island, on the northern shore of Lake Huron.

To thwart the feeling of frustration which was becoming apparent in the short retorts by the men, Major Simons moved from team to team, double checking a gondola's oxygen pressure gauge here, smoothing out a personnel difficulty there, briefing

continually on the requirements for keeping the animals alive on the flights to come. Although usually soft spoken and infinitely patient, he could, if occasion required, be abrupt, cajoling, rapidfiring, or even categorical. He was given to banter with a serious note. "Don't forget," he remarked to one of his men who had just dropped an aneroid barometer in the bottom of a gondola, "that Murphy's law of research is particularly applicable to the gondola instrumentation: anything that *can* go wrong, *will*."

Ed Lewis, launching chief of the Winzen crew, also was continually on hand, keeping an experienced eye on what his men were doing. An ex-Navy man of habitual calm, he simply smiled at the occasional sputtering of his men. Once, after a favorable forecast had ushered in utterly impossible weather, and a crew member had remarked that "that crowd of parasitic bandits over in the weather station ought to be sent up in one of the balloons," Lewis squelched him by commenting quietly that he would be dispatching them in the wrong direction!

"Everything's routine to Ed Lewis," one of the radiomen was heard to say. "A year ago when we were near the German-Czechoslovakian border launching a series of Winzen 'Balloons for Peace' through the Iron Curtain, I was standing next to Ed when a broadcast came through from behind the Curtain, offering a price on his head. 'Cheapskates,' was his only comment. But once he did seem a little excited. That was when we were riding along one dark night to a new launch site near Czechoslovakia. Our truck, jammed with balloons and gear, had been under way quite awhile when Ed looked up at the stars and remarked to the German driver, 'You're going in the wrong direction. We're headed east, not north, and are about to cross the Iron Curtain.' The driver's reply was a flat 'No; you're wrong.' A few minutes later, after the driver had paid no heed to a further query, Ed turned off the truck's ignition, opened

the door on the driver's side, pushed the surprised driver into a nose dive, switched on the key, turned the truck around, and headed back. Later, on reconnoitering the area, we found that we had been only a quarter of a mile from Czechoslovakia."

#### THE MAKING OF A STRATOSPHERE BALLOON

The long waiting for favorable weather gave our team an opportunity to become better acquainted with what was going on around us. One morning we found Otto Winzen's sparkling-eyed wife, Vera, in the recesses of the hangar, checking over some balloon fabric. Sensing our curiosity, she remarked that each balloon had been designed a little differently. "We're experimenting continually. The balloons are going 35,000 feet higher than last year, and now we're looking for the design that will allow them to go still higher in the stratosphere."

All the balloons have open bottoms—"appendages" was the word she used. The helium gas that takes a balloon aloft steadily expands, and if there were no way for it to escape when it has filled the balloon to capacity, the balloon would burst—like a weather balloon. To a query as to how a balloon is made, she explained that sheets of polyethylene plastic little more than one-thousandth of an inch thick—"much thinner than a lady's chemise, yet tough as a yacht's sail"—are drawn out on a great long table at their plant in Minneapolis, and some 60 sheets are heat-welded together, with glass-fiber filaments enclosed in the seams to carry the balloon's cargo. The seams, with the filaments in them, extend upward into the dome of the balloon and all the way down the balloon to the very bottom, where they are continuous with a series of 60 nylon cords. These cords extend downward somewhat beyond the bottom of the balloon and are fastened to a forged steel D-ring. To the other side of this ring is attached the top of the silk parachute, and to the bottom of the parachute is tied a 5000-pound-test nylon rope which carries the balloon's cargo. When the balloon comes off

the table it has in it some three miles of yard-wide polyethylene. Its weight comes to about 500 pounds. When stretched out on the ground, the balloon is about 250 feet long, which is equivalent to the height of a 20-story building. When fully inflated in the stratosphere, it has a diameter of about 175 feet and a capacity of over 2 million cubic feet.

"The men working on the balloon must need to be very careful not to punch a hole in the polyethylene," ventured Charles Thomas, who possesses a card-index mind accustomed to probing for details.

"Oh, we can't trust men for this job," Vera Winzen remarked blithely. "It is something only women can do. I get a little jumpy even when my husband starts handling the balloon while it's being inflated. There's something feminine about a balloon through and through, and that's why most of them are named after women." Turning in my direction, she said that it was up to me to name the balloons of the forthcoming flights.

"Fine," I replied. "I'll name them after Charles Thomas' wife, my wife, and my mother."

Meanwhile Otto Winzen had joined us and he was now pressed with questions from all sides. In his customary effortless way, his soft voice carrying a trace of guttural brought from Germany some twenty years ago, he began by saying that a balloon ascending into the stratosphere is like a rubber ball let loose in the bottom of a pool. The ball rises rapidly and on reaching the surface jumps out of the water, then falls back and floats. So it is with a balloon. It rises as fast as 1,000 feet a minute, and upon expanding to full capacity, continues upward beyond its ceiling in the stratosphere; then it discharges excess gas through its bottom, settles down quietly, and floats. If a balloon and its cargo weigh 800 pounds, about 900 pounds of helium lift will be put into her. It is that extra 100 pounds of lift—the "free lift"—which is vented when the balloon overshoots its ceiling.

"There's something eloquent about a gigantic balloon when being launched, whether it slips away tranquilly into the unknown or goes charging forward like an enraged elephant," Winzen went on to say. "Each has a personality of its own and every one is a solo performer. From where I stand on the launch platform, I can catch from one balloon the satiny swish of a wedding gown as a breeze twists it, and from another the full resilience of a four-master after it has lurched suddenly before a gust of wind. We've sent balloons up for many purposes, even some with rockets dangling from them which are fired into the upper stratosphere when the balloons reach 80,000 feet; but to us the flights to come have a particular significance because of their living cargoes. You'll recall the hot-air linen balloon launched by the Montgolfier brothers at Versailles in 1783 for the benefit of Louis XVI, Marie Antoinette, and Benjamin Franklin; how it carried a rooster, a duck and a sheep, which came out of the flight uninjured except for the rooster, whose wing was injured by a kick from the sheep just before the launching. That was the beginning of animal experimentation to determine whether high altitude flights are safe for man. A few years ago an Aerobee rocket took two monkeys and some mice very high into the stratosphere, and one of the monkeys is still alive and thriving in the Washington Zoo. But no concrete conclusions as to the effects of cosmic rays on them could be reached, because the entire trip didn't last more than ten minutes. Those animals were exposed to cosmic rays for about as long as a lion is exposed to fire as it jumps through a flaming loop. The fact that only the lion's hairs are singed doesn't mean that the flames aren't harmful. The coming flights will be the first that take animals within the range of the powerful cosmic rays for an extended time. They'll be up there near the edge of space, above 99.7 per cent of the earth's atmosphere. Let's hope that the weather settles down soon."

#### THE PROBLEM OF THE COSMIC RAYS

On another occasion we found Major Simons and Dr. Yagoda at Headquarters sitting on a well worn sofa facing the huge window that overlooks the airfield, gazing blankly at the overcast sky. They seemed to be at loose ends. It did not take long to draw them into a discussion of the cosmic rays to which our animals and tissue cultures would soon be exposed.

"I suppose you know why we're here and not back home in New Mexico carrying out these experiments," Major Simons began. "It's a question of magnetism. Our planet is a gigantic magnet, and the lines of force which connect its two poles reach far into space. The cosmic particles coming from outer space carry an electrical charge and for that reason they're deflected in the direction of the lines of force even before they enter the earth's atmosphere. Up here, in fact anywhere north of 55° latitude, the particles aren't deflected nearly as much as in New Mexico, and hence get to lower altitudes here than in New Mexico.

"But maybe I'm getting ahead of my story," the Major remarked. "Remember that the cosmic rays are not mere rays, but actual particles. You know that every atom of the earth or of the air consists of two component parts, a nucleus, with a positive charge, and a series of electrons, each negatively charged, which fly around the nucleus somewhat like the planets around the sun. By contrast, a cosmic ray particle consists only of a positively-charged nucleus. It has no electrons revolving about it. The amount of energy which a nucleus gives off owing to its speed is fantastic; it's as much as 100 billion electron volts."

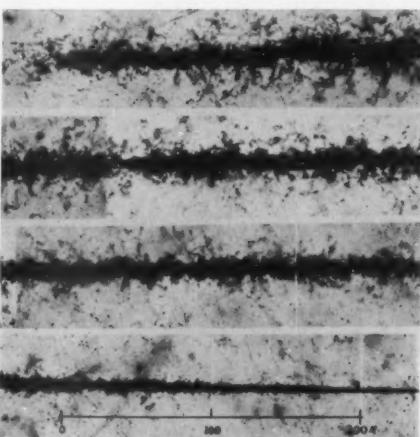
"How does the energy of these particles compare with that given off by an atomic bomb?" asked Dick, trying to grasp the meaning of those figures.

"A cosmic particle of iron is so powerful that it has an energy a billion times that released by a uranium atom in an exploding atomic bomb," was the answer.

The Major turned the conversation over to Dr. Yagoda by asking how far, in his estimation, the cosmic particles coming from outer space penetrate the earth's atmosphere.

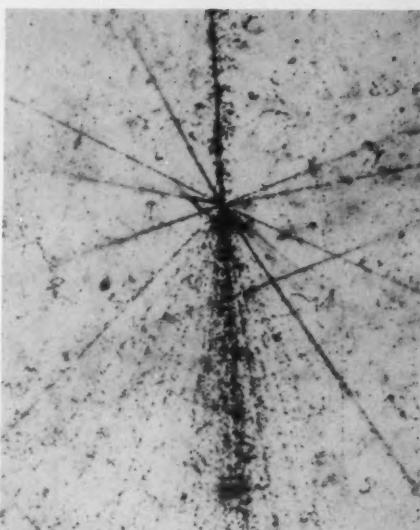
"Well, even up at this latitude relatively few of the heavier ones get much lower than 60,000 feet. Some gradually lose their energy, slow down and come to a halt. This kind of termination is called a 'thin-down.' The others are eliminated by colliding with atoms of the air. When an incoming cosmic particle collides head-on with an atmospheric atom, the result is cataclysmic: the particle and the atmospheric atom are both split into their component parts—protons, neutrons, alpha particles, and several kinds of mesons—and these go flying in every direction, giving a 'star' effect. The cosmic particle is by far the most powerful atom smasher we know.

"Now, as the fragments of the exploded atoms—the secondary rays—go sailing away," Dr. Yagoda continued, "they in turn encounter other atmospheric nuclei in their path, and further collisions occur. Tertiary rays are thus formed, and then quartanaries, and so on down to earth. By the time these



Courtesy of Dr. Herman Yagoda, Nat'l Inst's. of Health

FIG. 2. "Thindown" track of a slow iron nucleus in photographic plate. Delta rays are being given off perpendicular to the track. Altitude approximately 120,000 feet.



Courtesy of Dr. Herman Yagoda, Nat'l Inst's. of Health

FIG. 3. Cosmic ray star produced by the collision of a fast iron nucleus with a silver atom in the photographic emulsion. In this process, mesons (light tracks extending downward) are created by transformation of the kinetic energy of the incident iron particle into mass. The silver atom is destroyed and the heavy black tracks delineate the paths of protons and alpha particles emerging from the breakdown. Altitude approximately 120,000 feet.

byproducts reach us they're only a 'watered-down' version of what's happening up there. It's fortunate for us here on earth that the atmosphere forms a protective barrier which wards off the primary particles. In fact, the atmospheric barrier is equivalent to a jacket of lead about 40 inches thick."

At this point Dick raised another question. "Major Simons, Dr. Yagoda says that heavy nuclei get down to 60,000 feet. Why, then, isn't it enough to send the balloons to 70,000 feet?"

"Because only the lighter particles get down to that level in appreciable quantity. The 'primaries' have different weights, for they consist of all the elements from hydrogen to iron. The heavier, or larger, a 'primary,' the better is its chance of colliding with an atom of the air. It's like shooting

a barrage of bullets and cannon balls point-blank into a forest: the great majority of the bullets go further than the cannon balls before they lodge in a tree trunk. So it is with the cosmic 'primaries.' A lighter particle, such as carbon, can readily penetrate the atmosphere to 60,000 feet before colliding, while an iron particle seldom gets much lower than 100,000 feet."

Now we began to understand why our balloons must reach an altitude of well beyond 100,000 feet. But we were still curious to learn to what extent cosmic particles present a hazard which man must face when he travels in the stratosphere or, our more immediate concern, what those animals resting in the laboratory van by the side of the hangar will be up against in the sky, when the first clear, windless morning takes them aloft in the gondola of a balloon.

This was one of Dr. Yagoda's favorite themes. "From studies of photographic plates taken up in balloons during the past few years, we know that as cosmic particles slow down in the earth's atmosphere they give off more and more energy. Suppose an incoming cosmic particle consists of a calcium nucleus. In the fraction of a second during which it draws to a halt, such a particle gives off some 50,000 roentgen units for every one one-thousandth of an inch of an animal's body it traverses. That's a great many units for a local area when you consider that a man will eventually die when only 600 units are applied to his entire body, in a single dose, as from an atomic bomb. If what can be seen in a cosmic ray photographic plate occurs in the brain of an animal—that is the part which, I understand, interests you most—one would expect a calcium particle during this 'thin-down' to burn a very narrow furrow about a half inch long. Under the same conditions an iron particle would be expected to leave a broader and longer path of destruction. But the damage would be along a hairline path, and there alone."

"Could you give us an estimate of how many cosmic ray thin-down paths we can

expect to find in the brains of the mice that are above 115,000 feet altitude for 24 hours?" I asked.

"My guess," replied Dr. Yagoda, "is that over that particular period of time at such an altitude, you should find in every mouse brain about 10 paths which have been produced by the medium-sized cosmic particles as they come to a halt, and in about one animal out of three a much more prominent path plowed out by an iron particle. I don't envy you the job of locating them in the brain. I can assure you it will be like trying to find a needle in a haystack."

#### READYING THE GONDOLA AND THE RADIO BEACON

After eight long days of waiting, we noticed from the concentric lines on the evening weather map that International Falls was between two high pressure areas, which meant that at daybreak we should have perfect launching weather. This was the signal that sent us all back to our rooms to take a nap, for the preparations are an all night affair. So much time had been lost that it was decided to send two gondolas of animals up with the balloon.

By 11:30 all the gondola crew were on hand, and the lights in the three laboratory vans were blazing. Everyone had been galvanized into activity. Upon reaching the area, we noticed that the cups of the anemometer on top of the hangar were hardly moving.

In one of the vans, interest was centered on getting the first gondola ready. Airmen John Goldsmith and Jerry Johnson were working on the upper half of the 3-foot aluminum sphere, in the top of which were the tiny instruments that were to record simultaneously on a smoked disc the temperature and the pressure in the gondola, and, powered by silver-cell batteries, were to send this information in the form of coded messages to the radio beacon on the balloon's load line, for transmission.

While Jerry Johnson was making a final check of the small cylinder which codes the

messages, John Goldsmith turned his attention to the lower half of the gondola. Into it went a frame of foamed insulating plastic painstakingly cut to hold snugly each item it was to receive. Then he lowered the "cooling can" into its niche. It was a finned metal canister having a capacity of about two quarts. From it ran a metal tube which passed through the wall of the gondola to the outside. Goldsmith informed us that the canister was packed with ice which would keep the animals cool, as the gondola, in its ascent, was warmed by the sun. After the gondola had been in the stratosphere for awhile, the ice would melt and the low temperature of the water would prevent undue heat from accumulating in the gondola. High in the stratosphere, water boils at 33°F., and the boiling, since it attracts heat given off by the animals, aids in keeping them cool. Under normal circumstances the cold is no problem because the atmosphere at that altitude is too rare to conduct much of the heat away from the gondola.

The gondola's oxygen system was then put into running order. From cylinders attached to the outside of the gondola, a flexible tube carried oxygen to a valve in the top of the gondola. The valve would open automatically when the gondola's pressure fell to a certain level. "The animals use up the oxygen," Goldsmith explained, "and that's what makes the pressure fall."

Two fans deep in the gondola's recesses were turned on, and Goldsmith showed us how one circulated the air and how the other drove the air through the long sack of soda lime—a "snake" he called it—which would absorb the carbon dioxide given off by the animals.

By 1:30 the gondola was ready to receive the mice for the longevity study. Lt. Charlie Steinmetz and Sgt. Charlie Dahlberg brought them in—exactly on time. They were in a flat wire mesh cage, each in its own compartment, gnawing away on pieces of raw potato, which would quench their thirst on the long cruise. The cage was placed on the platform which covers the

lower hemisphere of the gondola. Then the two hemispheres were sealed airtight by means of 134 bolts and nuts, and around the sphere went a thick shell of insulating plastic and over that a layer of shiny aluminum foil to reflect the sun's rays. The oxygen tanks were strapped into place, and filled to capacity. The gondola purred from the vibration of its cooling fans like something alive. In another hour the second gondola was ready. It carried tissue cultures, carefully taped into place by Dr. Hild, and the mice, which were to be sacrificed soon after they had been recovered.



Courtesy of U.S. Air Force  
Holloman Air Force Base, N.M.

FIG. 4. Airmen John Goldsmith and Jerry Johnson putting final touches on the wiring of a gondola. The flat tray holds the mice. Fans for circulating air are in the lower hemisphere.

Over in the hangar, Vern Baumgartner, lanky, loquacious chief of the Winzen electronics crew, was keeping an eye on his men as they checked the equipment in the radio beacon, a contraption about the size of a box kite, which was to be attached to the upper part of the nylon rope hanging from the parachute. As usual, Baumgartner was warming his hands with a cup of coffee, a holdover from a habit acquired on his long watches as radio officer on destroyers in the two wars.

"At least it isn't as cold as on that New Year's Eve in 1947 when we launched a balloon from Camp Ripley, near Little Falls, Minnesota," he commented. "We called the place 'Little America' because it was 40 degrees below zero. Seemed like the stratosphere had come down on us. By gosh! if a wind didn't spring up and take that first balloon right over the home of Lindbergh in Little Falls."

His cup emptied, Baumgartner set one clock in the beacon so that at 9:00 that night it would signal the ballast can near the lower end of the rope to let loose its 100 or more pounds of steel shot. Then he set another, which at 6:30 the next afternoon was to discharge the cannon straddling the rope that held the parachute to the balloon; the discharge would send a steel blade flying down the barrel of the cannon, and this would sever the rope, freeing the parachute, which would then float downward with its cargo. The beacon's radio transmitter, which was to broadcast in short wave the signals received from the gondola, was also put into running order. Now everything was ready for the journey into the stratosphere.

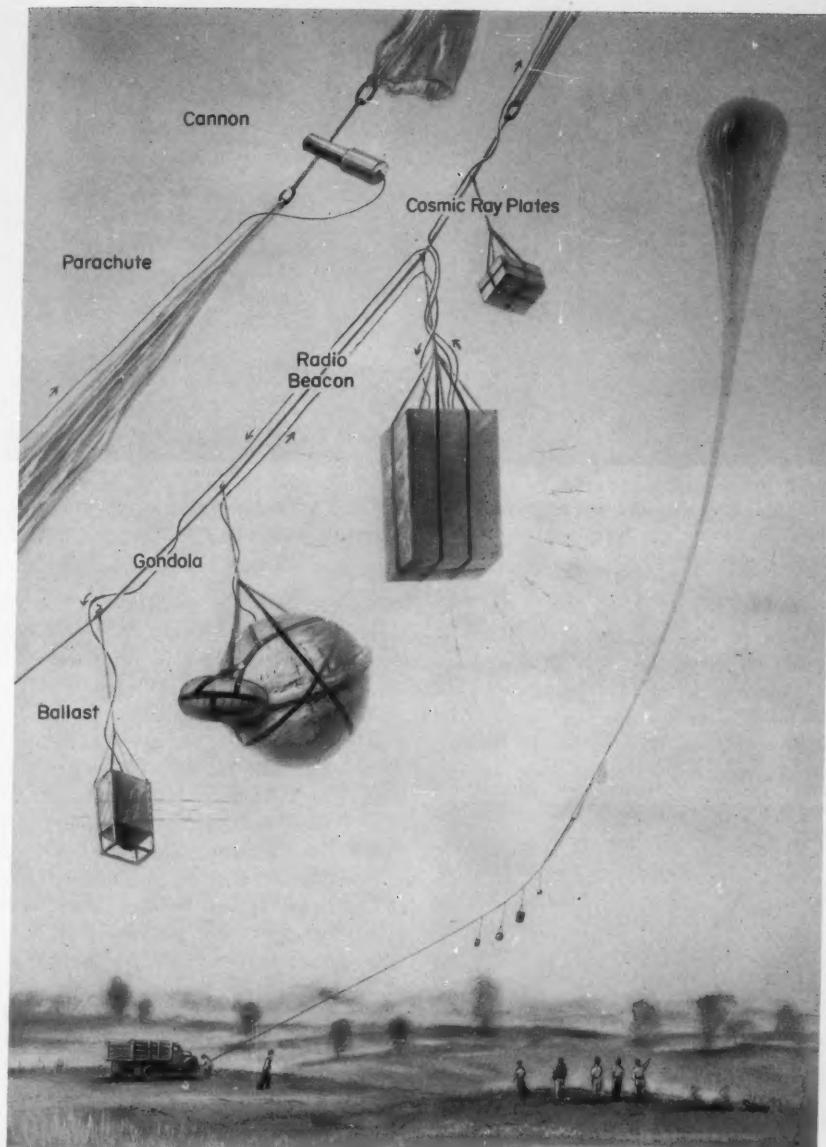
#### THE FLIGHT OF THE "NAN PAYNE"

It is still dark as the caravan of carts and trucks moves on to the runway. Floodlights playing on the launching site lend drama to the scene. Large red balloons are let into the air and tethered to the trucks. These indicate wind direction and wind speed, but there is no ignoring the carnival note they add. The balloon—all of its 254 feet—is soon laid down on the runway from one of the carts. Ed Lewis unpacks a parachute and ties its upper end to the harness ring of the balloon. To the bottom of the parachute he proceeds to fasten a 150-foot-long nylon rope, then walks to the other end of the rope and secures it to the bumper of a truck.

There must be a good dozen men at their stations, but Otto Winzen dominates the scene—not only in action, but also in appearance. One could not fail to spot him,

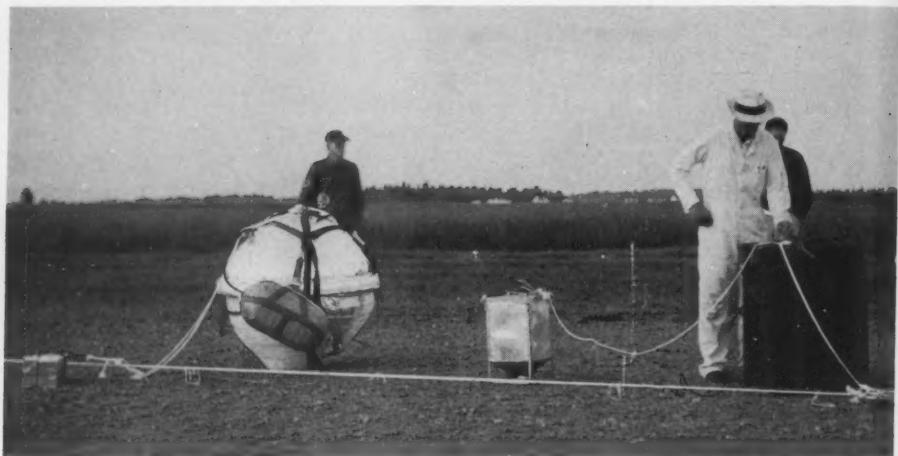
his trim figure moving quickly from station to station along the nylon rope, where each man has a special duty to perform. He bends over the balloon fabric, now here, now there, gently shaking its folds preparatory to inflation with helium. A skipper of a yacht of the Challenger class could not inspect a jib more carefully than does Otto Winzen his balloon. We look to see what he is wearing this time. Yes, he is dressed again in a distinctive way: white suede shoes; pale blue, floppy linen trousers; a terry cloth jersey trimmed in blue, with French tricolor weave spanning the "V" at the neckline; over the jersey, a polka dot, azure blue zippered jacket; and on his head a yachtsman's cap, blue with crossed anchors, that would have put Admiral "Bull" Halsey's headgear in the shade.

Soon Winzen is up on the launch platform, which carries a contraption that looks like a gigantic clotheswringer. The balloon fabric passes between the two rollers, over the nearest, under the farthest. Winzen gives the signal. Navyman Ledbetter turns on the valve of the helium truck, and the gas comes whistling through a huge red plastic conduit into the head end of the balloon. With a circling movement of his arm, like that of a brakeman beckoning an engineer to keep a train coming, Winzen brings life into the polyethylene. As the balloon begins to rear its head, wallowing about uncertainly, men crowd under to lend support. More helium goes in. Then, all of a sudden—indeed, in a flash—the inflated head gives off a sonorous "whoosh!" as it rises a sheer 70 feet. The balloon appears to be pinioned at the neck by the "clotheswringer," but actually it is immobilized by the truck to which the nylon rope is attached. Still more helium goes in. There is a load of 332 pounds to be taken aloft, and the balloon fabric adds another 526—a total of 858 pounds. The scale on the launch platform weighs the lifting power of the helium that is going in. After the dial hand indicates 858 pounds, another 100 is added to take the balloon up.



Drawing by McDonald Smith, AFIP

FIG. 5. A balloon on its way up. The nylon rope is about to be severed from its attachment to the truck. The insert gives details of the wiring. Signals from the gondola indicating temperature and pressure within the gondola are transmitted to the radio beacon which broadcasts the information. A message from the beacon explodes the dynamite in the head of the cannon, severing the rope between balloon and parachute and allowing the parachute to carry its "load" to earth. Actually the cannon is enclosed in a stout box for protective purposes. From design by Winzen Research, Inc.



Courtesy of Winzen Research, Inc.

FIG. 6. Mr. Vern Baumgartner connecting the radio beacon to the metal ring at the bottom of the parachute. To the left are the ballast can, the gondola (with oxygen tank connected) and a package of cosmic-ray photographic plates.

The balloon is now ready. It is 5:43. The sun is just coming over the horizon and is beginning to dispel the soft blue ground haze. Winzen picks up his megaphone. This is the finale. One by one, the spokesman for each station—at the cannon, the beacon, the first gondola, the second gondola, the

ballast can, and the rope's end at the truck—affirm that all is ready. Surely the balloon will spring a leak if Winzen does not let it loose soon. But Winzen is not yet ready. Leisurely he gazes into the sky to be sure no aircraft is flying in the vicinity. Turning, he steals a final glance at the balloon, which in his mind he christens the *Nan Payne*, and turning still more, scans *Nan's* brood attached along the nylon rope.

Now Winzen is ready. A quick deft sweep of his arm against release lever of the "clotheswringer," and the *Nan P* is set free. She rushes up through the haze like a ghostly apparition, gathering momentum as she heads toward the truck. A few seconds later the nylon rope attached to the truck is severed. Up she soars, at about 500 feet a minute, as lightly as thistledown.

6:15 A.M. The Navy radio truck with its two drivers, Bob Clark and Chief Serley, draws up in front of Einarsen's station for instructions. Winzen and Simons beckon them into an anteroom of the station where they are washing the sleep out of their eyes. As briefing for the chase begins, Simons plugs two electric razors into the wall and uses them simultaneously, one on either side of his face, completely oblivious to their



Courtesy of U.S. Air Force, Holloman AFB, N.M.

FIG. 7. The balloon secured by the launch arm just raising its head off the ground. Otto Winzen holding the conduit bringing the helium from a nearby Navy truck.

hum. One, he explains, is his spare, so why should he not keep it in good running order. Winzen recommends Grand Forks, North Dakota, as the site of the first rendezvous for the truck and the planes. From his image in the mirror, the men manage to learn that Major Simons concurs. En route, first at Baudette, Minnesota, the drivers are to get bearings on the balloon and transmit them to the radio station in the van standing near the hangar. Soon the truck is off down the road with dignity and dispatch, its antennae bending in the wind and the direction finder pointing west.

6:40 A.M. The Navion, piloted by the veteran Russ Iverson, takes off to keep its eye on *Nan P*. Since her departure, *Nan P* has been heading southeast, blown by the prevailing surface winds.

7:30 A.M. Russ reports her over Black Duck Lake at 110,000 feet. Having gotten into the stratosphere, she is turning back toward International Falls.

8:30 A.M. Now she is heading due west. At this time of the year the winds up there are always toward the west. Short-wave radio messages from the balloon's beacon are coming in to Joel Baumgartner in the radio van every ten minutes. I hear the insistent, twanging "dit da da's" and inquire what they mean. "That's 'WEH' coming in now; means that she's at 115,000 feet," he replies. A little startling, hearing one's own initials called down from the heavens!

9:15 A.M. The telephone in the hanger rings. I answer. The voice says: "This is the CAA Office in Minneapolis; thought Simons and Winzen would be interested in knowing that a flying saucer has just been reported over Little Fork."

11:30 A.M. Through the theodolite (a surveying instrument for measuring vertical [elevation] and horizontal [azimuth] angles by means of a telescope), Sgt. Jack Coniff has been keeping continual tab on the balloon. She is now 80 miles to the west, and perched up there at 118,000 feet. The sergeant has the temerity to call this magnificent pearl an "onion," but no protest comes

from his audience because he is speaking merely of her shape. He adds that she is "tighter'n a bullfighter's pants," and should be belching off some gas soon.

"How far do you think the balloon will go?" I ask.

"Oh, she'll just keep ying-yang until she gets near Montana," was his prophetic reply.

11:30 A.M. The Navion advises that the balloon is near the southern shore of Lake-of-the-Woods, moving along at about 24 miles an hour. Her short-wave signals give the following message: altitude 118,000 feet, gondola temperature 73°F., gondola pressure 15 pounds per square inch.

1:00 P.M. Now that the *Nan P* is well on her way to the west it is time for the C-47 to join the Navy truck and the Navion in the chase. The C-47 will get under her, obtain bearings through its astrodome, and keep in range until nightfall in order to make further checks on her position and speed. We prepare to board the plane. Dr. Hild packs his microscope and other equipment into the fuselage, and Lt. Lebush, the "control" mice, which are to be exposed to much the same rigors of travel as the mice which have been borne aloft. Major Simons and I are the last to climb in. At 1:37 we are leaving the runway and are soon over dense, lake-dotted forests. In a half hour we have caught up with the *Nan P*, and stay with her for awhile.

4:50 P.M. We land at Grand Forks, North Dakota. Having located the balloon to the east through the theodolite, we hail a taxi and go into town to find a restaurant. We had heard of Major Simons' Diamond-Jim-Brady appetite and wonder whether there has not been some exaggeration. When the waitress turns his way, he does not give her a chance to ask for his order. "Bring me a quart of milk with two glasses of iced tea and a double hamburger steak dinner without the peas and potatoes on one of them," he says. And when the waitress, baffled, looks around to see who else he is ordering for, he continues, impatiently, "It's for me; bring 'em all at once, and if they're not

ready, bring me the pie *à la mode* with two scoops of ice cream instead of one, and I'll start on that—and, oh yes! bring the soup, too, I'm hungry." When she asks, "What kind of pie?" he replies, "it doesn't matter, just *bring* it—well, make it cherry pie." It was not long before I heard tittering from the waitresses who had gathered in a huddle behind us to learn the latest about one of the customers. "Bet he'd even go for a steak *à la mode*," I heard one of them say.

8:45 P.M. We have returned to the airport. The *Navion* is now moored near our C-47. The *Nan P* is far to the west, sailing resolutely into the fading sunset. Brilliantly lighted by the setting sun, she looks like the evening star. A little later, having taken on a harvest moon hue, she is outshone by Venus. A pity that she is expendable! Tomorrow, after she has accomplished her noble mission, a segment of her wall will be ripped out by a line attached to the top of the falling parachute, and she will wallow and sink, like a harpooned whale, and ultimately be found in farmers' refrigerators, reduced to vegetable bags.

8:50 P.M. The *Navion*, which took off a half-hour ago, reports that the balloon is over Devil's Lake, at 115,000 feet, and traveling at 39 miles an hour. I inquire: "Why 39 miles? Why not 40?" and am told curtly, "Because it's 39." Who was it, I ask myself, who so aptly remarked that "the open mouth is the source of all annoyance"?

By 9:10 the *Nan P* has dropped to 100,000 feet. Major Simons appears worried; he wonders why she has not yet dropped her ballast.

9:30 P.M. Our C-47 takes off, and Grand Forks is soon far behind. It is too dark for us to see the *Nan P*, but her radio signals tell us that she has climbed back to 120,000 feet. We continue west, and being thoroughly worn by the vibration of our old "gooney bird"—as the C-47 is called—we scan the map in search for the nearest field.

11:15 P.M. At an Air Defense Command field in the middle of North Dakota we taxi

to a stop. As the door of our plane opens, we are confronted by an officer and an armed guard. The officer inquires of Major Simons the nature of his mission, and is given an explanation. He then introduces himself as Lt. Edward Fox, Officer of the Day, and in the name of the Commanding Colonel, offers us quarters for the night. As we walk toward "Operations," Fox remarks: "We're certainly relieved to have that mystery cleared up. At 5:30 this afternoon we received a call from the FBI at Grafton that a 'flying saucer' had been spotted. A farmer had called the sheriff, stating that he had seen a strange light moving slowly through the sky, and the sheriff had communicated the news to the FBI. In three minutes we had a scramble in the air."

"A what?" Lebish inquires.

"A scramble," the Lieutenant answers. "Three interceptor 84's. Those jets were under the 'saucer' in five minutes, and no matter how high they climbed they still had to look up to see it."

"How high did they get," Lebish asks.

"Oh, about 40,000 feet, maybe," he parries.

4:20 A.M. Fortified with a substantial breakfast, we are in the air again, following the *Navion* up. I wonder how easy it will be to find the balloon up there in that dark immensity against the background of the stars, and am reassured by Major Simons' remark that the balloon is easier to see in the moonlight than at early dawn. The snores around me reveal that the men are abiding by the catch-as-catch-can rule. But after a half hour all are on the alert.

5:48 A.M. The *Nan P* is discovered far, far ahead, reflecting the silver of the nearby moon. Major Simons' plotting of her course all yesterday afternoon and evening has led us directly to her. The *Navion* is circling under her as we arrive. In the interim the balloon has travelled 129 miles at an average of 16 miles per hour. She has slowed down as though waiting for us.

6:25 A.M. Now a new angle. Both we and

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the Navion are circling downward to have a rendezvous with the Navy radio truck which, we hear by radio, has reached the scene during the night. The plan is that on the last lap, Simons, Hild, Lebush and I are to join the truck crew in tracking down the quarry.

7:00 A.M. We put down at Minot, North Dakota. C-47, Navion and the truck confer. The tracking center at International Falls is then consulted by radio. Not long afterward six of us, including the two drivers, head west in the truck. Three ride on the front seat and the other more fortunate three are stretched out on the floor. For hours we keep 15 to 20 miles ahead of the balloon, taking bearings on her, and radioing her position back to Headquarters at International Falls. By midafternoon we draw into Alexander, North Dakota.

5:00 P.M. Continuing westward, we reach Montana. The balloon has been moving more slowly than anticipated, and zero hour is approaching. It is obvious that we have come too far west. Someone remarks that ballooning offers more opportunity for hindsight than any other diversion. Doubling back east a full ten miles, we come to a cemetery perched on a hill, and one of the drivers volunteers that cemeteries are where balloons like to land. "There's something behind that superstition," remarks Hild. "I can recall from school days back in Kiel the story of the balloon launched during the festivities at Napoleon's coronation, how it drifted down to Italy and finally crashed on Nero's tomb."

At the driver's insistence, we decide to reconnoitre the sky from the sister hill across from the cemetery. We unfasten the rickety gate at the base of the hill, drive in along parallel indentations which we refer to euphemistically as a road, get to the top, and step out of the truck gingerly, for we find that this has been a favorite idling spot for cows. Major Simons changes clothes and shoes, metamorphosing into a lumberjack. A second pair of socks is put on by Lt. Lebush in readiness for a dash through

cockleburr laden wheat fields. Dr. Hild adjusts a telescopic lens on his camera. Chief Serley, one of the drivers, puts on a red baseball cap, which matches the color of the luminescent cloth thrown over the top of the truck to attract the attention of the C-47 and the Navion.

The Major is soon flat on his back, searching the sky with binoculars. Heavy battleship-gray clouds, with only an occasional peephole, have suddenly gathered. The C-47 advises Bob Clark, sitting at the radio in the truck, that it cannot see the balloon; it has ascended to 14,000 feet but is unable to get above the clouds.

6:15 P.M. Major Simons cries out, "The gondolas have just been cut down . . . now having a free fall . . . parachute's not opening up yet . . . they've fallen at least 25,000 feet and are still plummeting . . . ah! now the parachute's opening . . . the gondolas are swinging back and forth under the parachute like they're on a flying trapeze . . . now I've lost them behind the clouds." Turning his binoculars back to the balloon, he tells us that a big slab has been ripped from her side and that she is keeling over on her side and crumpling.

Back on his feet again and heading quickly for the truck, the Major announces that we are a mile or two to the west of the "cut-down," and should be 25 to 30 miles to the east. "Get us out of this pasture fast, will you?" he says to Serley, "and then barrel her down the road. We're already a half hour late. The 'load' should hit the ground in another 35 minutes." Heavy dust is siphoned on to those of us who are in the back of the truck. After some 15 minutes had gone by, the brakes screech and our truck comes to a halt. Major Simons mounts to the roof of the truck, and someone comments that he is up there in order to get closer to the sky with his telescope. Passing motorists wonder what is happening in the sky or to us.

On we speed again. My wristwatch keeps ticking away until the 35 minutes are up. No one says anything now. There is noth-



Courtesy of Winzen Research, Inc.

FIG. 8. Recovery of a gondola in the middle of a corn field. Practically all the animals returned in good condition after a flight to about 130,000 feet. Admiring two of the animals are (left to right): the author, Major Simons, Lt. Lebush, and Mr. Otto Winzen.

ing else to do but to pull into the nearest town. Garrison, at the North Dakota border, is where we come to a halt. We park the car on the curbless main street, and the Major goes into a filling station and telephones our location to Headquarters at International Falls. Not long afterward we hear a nearby radio station interrupt its program to tell all persons in the area to be on a lookout for our gondola and parachute. They are told a sign on the gondola indicates the telephone number at International Falls that should be called, collect.

Over the radio we hear that the C-47 and the Navion have begun to comb the area, the C-47 at 200 feet, the Navion at hedgehop level. They are looking for congregations of cows, who are curious about gondolas, and for a line-up of cars along a road, for farmers, too, take advantage of extraordinary diversions such as this. The C-47 reports seeing a scramble of jet planes hedge-hopping just a few miles off, but the crew are too fatigued to realize that the jets had been dispatched from a nearby Air Defense Command field to investigate the two

silver orbs which had been seen floating down from the sky.

7:15 P.M. We are all in a dingy bar at the edge of town with the truck pulled up at the door so that we can hear its radio. All order hamburgers and coffee except Major Simons, who asks for soup to begin with. Our orders are placed before us, and as someone is making a comment about the sign, "TRADE, TREAT OR TRAVEL," which hangs on the mirror behind the bartender, the radio in the truck starts up. It is the C-47 reporting that the gondola has been located in such-and-such an area. Out we swing like firemen starting for a fire, each clutching his hamburger, except for the Major, who casts a frustrated look at his plate of soup as he stops to pay the bills. Soon we are off. Bob Clark pushes the car's throttle so far down that we fear his foot will go all the way though into the carburetor. Major Simons, in his customarily jovial way, makes some wisecrack about the plate of soup he left stranded at Garrison. After we had torn along a good 20 minutes through country with farm houses miles apart, the Navion contacts us.

"We've just seen her; 'tain't nothin' but the torn-up balloon."

So we settle down by the side of the road and wait. Against the rapidly darkening eastern sky we see the C-47 and the Navion head back toward Minot, defeated. The red-purple sunset holds no charm for us.

7:45 P.M. The word comes from International Falls exactly two hours after the cut-down. Mrs. Jan Cammermyer has the "package" on her farm. It is one mile west of Alexander, the town we had passed through that afternoon. That is at least 20 miles away, and we estimate that there is only thirty minutes of oxygen left. Following instructions implicitly, we finally reach a line of cars parked on the side of the otherwise empty road. A farmer at an opened gate points at the crowd in the middle of a cornfield, and in we go.

We start on one of the gondolas. The

farmers pitch in and help. Four of us remove, as quickly as we can, the 134 bolts which seal its upper and lower halves. We raise the lid and discover life inside. While one of us places the mice (90 of the 93 are still living) in more comfortable quarters, the others remove the insulating jacket of the second gondola. The gondola is icy cold. There is not much need to remove those 134 bolts rapidly, but we do so anyway. The farmers are asked to send their children for a pail of water, so that they will not be there when the gondola is opened. The conditions inside the gondola are as anticipated. Even Dr. Hild's tissue cultures—all 40 of them—are frozen solid. Hild—buffalo-chested and bull-necked, with a deadpan expression concealing a sharp wit—picks up one of the cultures, turns a flashlight on it, examines it with a practised eye, then replaces it without so much as curling his lips. He has had disappointments before. His long experience as torpedoman on a German PT during the war had taught him to accept situations as he found them.

It is useless to examine further the mice in the second gondola, but the 3 dead ones in the first gondola need to be autopsied in an effort to learn why they died. Lt. Lebish and I carry them into the back of the truck, and with the aid of a flashlight soon have the job completed. No apparent cause of death is found. The brain and spleen and other organs are preserved for later study under the microscope.

10:10 P.M. We are off in the truck headed for Alexander to get something to eat. Reaching the outskirts of the town, we come to a halt in front of a dusty old café, to which we have been attracted by the neon sign, "STEAKS." The strains of "Fine and Dandy," played with some unusual improvisations, greet us as we push open the swinging doors and walk past the bar.

"That isn't the way I feel," says Lt. Lebish as we find our way to a cubicle. A Mona-Lisa smile spreads over his face as he saunters toward the piano, calling back, "Order a steak for me." A word with the

pianist, and Lebish seats himself before the keyboard. The clink of china ceases and groups of men at the bar pause at their beers and whiskeys, as Lebish, a professional jazz pianist in New York prior to entering the Army, lets loose on a wide-open boogie-woogie, the "C Jam Blues," his head beating the cadence. That left hand of his is putting into the theme all the hullabaloo of the chase we have just experienced. The silence continues as he launches into another tune, then another, winding up with the soft, sweet and blue, "One for My Baby, and One More for the Road."

11:30 P.M. We are now ready for the long drive to Minot, which is a full 150 miles to the east. Upon reaching the truck, we find that one of the tires is flat. It is midnight before the truck is fit again to travel. Simons, Hild and Lebish curl up in the back of the truck and go to sleep. Where they have found room between the gondolas and the other equipment is hard to conceive. The two drivers and I are in the front seat. One of them, Chief Serley, has the wheel. After an hour of piercing the pitch-black night, the truck begins to weave back and forth across the road. Responding to my casual comment on the peculiarities of his tactics, Serley explains that he is trying to avoid the ruts. This happens again, and gradually the truck heads straight for a ditch at the side of the road. I shout; the other driver, Bob, who is next to Serley, wakes up, and catches the wheel just in time. Serley halts the truck, candidly admits that he had been asleep at the wheel, and without further ado, steps out of the truck, walks around the front to the other side, and I slide over to the middle of the seat as he gets in and promptly falls asleep. Bob is now at the wheel. A thunderstorm breaks loose, and soon the truck is slithering back and forth as though it were negotiating a wet Georgia clay road. After twenty minutes, Bob tells me that he, too, is finished. Following Serley's example, he soon is on the far side of the seat, asleep, with me now at the wheel. Chauffering those five bodies

makes me feel like an ambulance driver, if not an undertaker. The soft rear tires and the heavy load make driving precarious. The roughness of the road is such that the truck rattles like a bucket of bolts, outdoing the thunder. We arrive at the Minot Airfield, unload on to the C-47, proceed to town, and as we enter the hotel for a "night's" sleep, the day is breaking.

Late that afternoon we are back at our base, in International Falls.

#### THE FLIGHTS OF THE "EVELYN ANDERSON" AND "EMMA VOGELGESANG".

That evening, with a spell of good weather assured, the plan for the remaining two flights was set. The *Evelyn A* was to be sent up at daybreak, and the *Emma V* the following morning. The *Evelyn A*, with a full load of mice for autopsy during the first two days after their recovery and some trays of tissue cultures for study on location and later in Galveston, was to be cut down after a 26-hour run, and the *Emma V* was to have a 10-hour flight, carrying the mice susceptible to leukemia.

By daybreak the hulk of diaphanous polyethylene had been laid out on the runway. From the back-and-forth bobbing of the red weather balloons at 100 and 200 feet it was apparent that the winds were "marginal" for launching.

Soon the *Evelyn's* top, inflated and erect, was weaving back and forth in the wind, awaiting only Otto Winzen's signal to let her be airborne. As the familiar megaphone was slowly and deliberately coming up to Winzen's lips, Major Simons, standing next to the gondola, began waving frantically. A final pressure check had disclosed a leak in the gondola. A truck was soon speeding to the hangar to fetch the acetylene torch and tools, and during the ten minutes that elapsed, gusts of wind indented and swirled the *Evelyn A*. Her protests, expressed as satiny swishes, were becoming louder as, the job completed, the megaphone came once more into position. Although the launch platform, weighing 5,500 pounds, was jump-

ing off the ground with every upward tug of the balloon, Winzen took time to scan the heavens. It looked as though, in the manner of the Indians of the Plains, he were sending up a silent prayer.

"All set now? Watch the rope," he cautioned through the megaphone. Then he turned, nimbly unlatched the launch arm, and the *Evelyn A* leaped skyward, giving off an agonizing, crashing, echoing sound. As she moved swiftly in the direction of the truck, a gust of wind caused her to hesitate; her long nylon rope then lashed out to one side in an undulating movement as though it were a whip being cracked. Agile little Herk Ballman, standing at the level of the beacon, just managed to jump out of its way. An old hand at balloon launching, he had always been successful at outwitting a rampaging balloon. His close call brought to mind a launching in Europe in which one crewman had had his scalp ripped from one end to the other by a rising gondola, and another his forearm mangled and his shoulder dislocated by a swerving nylon rope which had momentarily looped itself around his arm.

Gathering momentum, the *Evelyn A*, circling like a twister in a tornado, scooped her "packages" off the ground, and was about to dash away with the wind when, with a horrendous, resounding crack, which shook the air like an explosion, she was halted by the tautened rope which still remained secured to the truck. It seemed that she was beginning to pull the truck skyward. Ed Lewis, customarily stationed at the truck to perform the last rites, was trying frantically to sever the rope. In watching the balloon's antics he had got his knife turned around and was sawing away with the wrong edge. A second later the *Evelyn A* was cut free.

The hours passed, and the *Evelyn A* had not gone very far. By noon she could still be seen through the theodolite, at 131,500 feet (about 25 miles), a new world record altitude. In her native element, she was now as poised as though sitting on a roost.

At daybreak the next morning we were by the side of the road, 20 miles east of Baudette, Minnesota, keeping track of the *Evelyn A* through the theodolite. Never before was a balloon so high after a night's flight. It was evident that the beacon had let loose its 175 pounds of ballast during the night, allowing the balloon to bounce back to its record altitude. The cargo now had added meaning.

A little after 7:00 we caught a glimpse of the opened parachute. At 7:40 the message came that the gondola had fallen in an impenetrable wooded bog. Soon afterward we heard that Major Simons, taking a calculated risk, had landed an Aeronca on a plot of high grass two miles from the scene and was beginning a trek across a treacherous bog. A helicopter had been dispatched from Duluth.

Upon our return to International Falls at 11:00, Einarsen's Seabee, with Vera Winzen and Sgt. Dahlberg as observers, was landing on the runway after reconnoitering the site where the parachute had brought the gondola to earth.

"The gondola's in a bog twenty miles this side of Pine Island," Einarsen exclaimed. "On hedge-hopping over the area, we found the underbrush so thick that even a jack rabbit would lose its way trying to get through. Some distance away we spotted a footpath, but it seemed to end in the top of a spruce tree. Wasn't any place to land—too many cat-faced, cowhorned cedars and arsenic-green sloughs—so we went over to guide Major Simons to the gondola. It looked as though every step took him knee deep into the soggy moss. Once, after circling, we saw him, face down, over some moldy tree trunks and roots, apparently drinking some of the black water that was lapping the roots. Looks like a one-way trip to me. Gas was getting low, so we had to leave."

By noon, three of us were over the area in the helicopter—a Sikorsky H-5. The terrain below was as rugged as it had been sketched by Einarsen. A column of smoke

spiraling into the sky led us directly to Major Simons. Only 200 yards separated him from the gondola, which he was unable to see. Fortunately the gondola was in the shade, but was any oxygen left in its tanks?

The 'copter was lowered to treetop level—some 35 feet from the ground—and hovered there while the pilot, Lt. Forbey, put the winch into action. Lt. Flatter, selected for his litherness, got into the harness at the end of the cable, and was soon swinging in mid-air. Then a gust of wind hit the 'copter, engaging its tail in a tree top. The



Courtesy of Winzen Research, Inc.

FIG. 9. Helicopter taking off after landing a gondola and the author on the air strip at Pine Island.

'copter lurched, then righted itself again, but not before its rear rotor had clipped off the topmost branches. The way clear, Lt. Flatter was quickly lowered to the ground. Just as soon as he had slipped the cable's hook under the harness of the gondola, the winch again went into action, and shortly the gondola was aboard. Without further ado, our whirlibird was off.

Another 20 minutes found us on the stubbled landing strip of the game preserve on Pine Island, and the gondola, the autopsy equipment and I unloaded. One of the rotor blades was rather deeply indented by the

impact. The rescue of Major Simons and Lt. Flatter was uppermost in Lt. Forbey's mind as he raised the 'copter in the air to test its navigability. Satisfied, he threw open the controls, and with the clatter of an egg-beater, the 'copter was off.

A game warden was on hand with his truck, and in a few minutes we reached the clearing in front of his cabin. Finally the gondola was opened. There they were—all 60 mice cocking their eyes at the warden and me as though asking for food. The tissue cultures, too, were unscathed.

At 2:30 that afternoon, Abe Abramson, Dr. Hild and Lt. Lebish drove up in the radio truck, covered with dust thrown up from the almost forgotten lumberman's road they had managed to find. I was surprised to see them. Abe's chief concern was for the *Emma V*, launched that morning at day break. He pointed her out to me. There she was, high in the sky, very high. But Lebish's eyes sought out the mice, and Hild's thoughts were on his cultures. Upon seeing the cultures unharmed, Hild did not so much as crack a smile. He proceeded simply to gather them together and take them into the ranger's cabin. For an hour after that we could hear his Zeiss camera clicking as he found cells of particular interest under the microscope.

The *Emma V* was chattering volubly on the truck's radio every ten seconds, as saucy and repetitious as a parrot. Her gondola was to be cut down automatically at 4:00. Precisely at 4:00 the radio in our truck blared, "She's been cut down"—the C-47 was talking—but we were looking straight at her and we knew this was not true. Through the theodolite, we could plainly see the gossamer-like thread with two or three molecule-sized glistening objects hanging from her bottom. The minutes passed, and the *Emma V* was still holding on to her load. An hour passed, and another, and she remained obstinate. This had never happened before.

That night and the next day went by, and still the *Emma V* clung to her gondola of

mice. Hope for the animals had faded. At intervals during the day we painlessly sacrificed the mice which had been recovered from the *Evelyn A* flight, preserving the brains for later study. It was necessary to obtain the brains at this early stage, for any nerve cells which may have been killed by cosmic rays would be expected, in time, to vanish without trace.

Camp at International Falls broken, except for two airmen who remained to keep a watch on the *Emma V*, the C-47 took us back to Washington. By 4:00 the next morning the 90 mice from the *Nan P*, apparently none the worse for their experience, were back in their cages at the Armed Forces Institute of Pathology. The 100 "control" mice which had taken the journey to International Falls and back without being sent into the stratosphere were placed in cages on an adjoining rack. Will the two groups live equally long? Will the litters they bear be equally numerous and healthy? These are some of the questions which only time can answer. As to the brains now preserved in bottles, will the paths of cell destruction predicted by Dr. Yagoda be found? Helping us to answer this last question are Dr. Norbert Schümmelfeder of Bonn, Germany, and Dr. Erik Krogh of Aarhus, Denmark, who have had long experience in the techniques needed for this particular work.

At home over coffee a few hours after my return to Washington, my eyes lit on an item in the newspaper which had to do with an errant balloon over Lake Superior. Our *Emma V* was described as an unruly giant. The following morning the account was continued, the caption reading, "Balloon Dips But Evades Plane Guns," and in small print, "A huge runaway research balloon, aloft at the edge of space for four days, tantalized scientists today by descending to an altitude just out of range of airplane guns. An Air Force jet stood by at Duluth, Minnesota, ready to go after the balloon the moment it descended to 40,000 feet, the plane's maximal altitude." On the fifth morning there was this surprising an-

nouncement: "Wandering Balloon is First Satellite." The *Emma V* was sighted over Bathurst, New Brunswick, and was headed over the Atlantic for "a high-altitude European tour." Otto Winzen was quoted as saying that some of his balloons have wound up in Norway, and one even in North Africa.

In spite of the misadventures on our expedition, the carrying of animals very high into the stratosphere has now become an epic reality, largely through the ingenuity of Major Simons and Mr. Winzen and

their skilled and colorful teams. Clear-cut answers as to whether cosmic rays are hazardous are bound, in time, to emerge. Up there, in the as yet hostile and forbidding fringes of space, where it is always night, the ubiquitous mouse has gained a foothold. Before man can do likewise, or, indeed, pierce the stratosphere and travel through the black unknown beyond, he will continue to need balloon-borne animals as forerunners—unless, perchance, man himself is willing to serve as "guinea pig" for his fellowman.



# Pilonidal Sinus\*†

By

JOHN T. PHELAN, M.D.‡

THE PURPOSE of this paper is to describe a technic of marsupialization for the treatment of pilonidal sinus. I am aware that the marsupialization procedure has been used by others, such as Buie and Curtiss,<sup>1</sup> Abramson and Cox<sup>2</sup> and Peterson and Ames,<sup>3</sup> but in my opinion it has not been stressed as often as its merits deserve.

The cause of a pilonidal sinus remains uncertain. A number of authors consider the sinus to be a developmental anomaly.<sup>4-6</sup> Others believe the disease is acquired.<sup>7-9</sup> At present, the theory that the lesion results from a developmental anomaly is the one most widely accepted in the medical literature.

## PATHOLOGIC ASPECTS

Pathologically, a pilonidal sinus varies from a simple sinus to multiple sinuses in the natal cleft. Often the condition remains unnoticed until infection supervenes, at which time it may present itself as an acute fulminating abscess, or as a chronic, recurrent fibrous tract with daughter tracts extending out onto each buttock. Occasionally, nests and clumps of hair may be found within the sinus.

The development of daughter tracts extending upward and laterally onto the buttocks and sacral region has been explained

\* The statements and conclusions published by the author are the results of his own study and do not necessarily reflect the opinion or policy of the Medical Service of the United States Air Force.

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‡ Formerly chief of surgical service, Barksdale Air Force Base Hospital, Barksdale Air Force Base, Louisiana.

by Davies and Starr.<sup>10</sup> These authors report that the natal cleft is a relatively avascular area, but is bordered by small vascular elements which terminate at the medial edges of the buttocks. These vessels pass in close association with fibrous septums which extend down to the fascia of the gluteus maximus. When the pilonidal sinus becomes obstructed, the point of least resistance is around these vessels and septums, and thus daughter tracts are formed.

Microscopically, the histologic picture is variable in respect to the inflammatory cellular response. The sinus tract consists mainly of a dense fibrous structure, occasionally covered with epithelial elements. Weale<sup>11</sup> has shown that hair follicles are present within the substance of the tract, and other investigators have presented evidence that apocrine elements constitute a part of the pilonidal sinus.

## PREVIOUS STUDIES

The surgical treatment of pilonidal sinus has aroused considerable interest in recent years. In general, the surgical management can be carried out according to one of two methods: (1) some form of excision and primary closure, and (2) some form of open procedure.

Kleckner<sup>12</sup> in 1936 conducted a survey of members of the American Proctologic Society as to their procedure of choice in the treatment of pilonidal sinus disease. He found that 87 per cent of the members preferred some type of an open procedure, whereas 7.5 per cent used a closed method. The remaining 5.5 per cent were in favor of a combination of the two methods. The percentage of failures as reported in Kleckner's review was 23 for the excision and primary-closure technic and 1.13 for the open procedure.

In 1947 Rosser and Kerr<sup>13</sup> presented a

survey of the reports of 27 surgeons who had had considerable experience with this problem while in the military service during the war years. Twenty-one were in favor of an open procedure, while five were of the opinion that a method of excision and primary closure is the operation of choice. One expressed no opinion.

On the basis of the foregoing reports the impression could be gained that the open method is the procedure of choice. However, during World War II, when surgeons were confronted with this disease entity among large groups of men, considerable emphasis was placed on some type of primary excision and closure. Yet, when some of these publications of this period are reviewed, it is found that almost all authors advised prolonged periods of rest in bed after the operation, and that the periods during which the men were not permitted to return to full active duty were rather lengthy. Bartlett,<sup>14</sup> for instance, advised strict rest in bed for 10 days. Larsen<sup>15</sup> wrote that his patients were up and about in 14 days, but did not return to active duty until 6 weeks had passed.

During these same years, Peterson and Ames<sup>3</sup> reported on more than 100 patients treated by the marsupialization method. They said that the patients treated by this procedure were ambulatory within 3 or 4 days, and although the patients were confined to a hospital ship until healing was complete, they were able to return to full duty so far as work usually done by hospital personnel was concerned.

Abramson and Cox,<sup>2</sup> writing on their experiences at the Walter Reed Hospital, reported their results of marsupialization among 73 patients. The rate of recurrence was 2.1 per cent. They also wrote that all patients were permitted to return to limited duty within a few days after operation, and to full duty in 1 month.

Another means used by surgeons to evaluate the procedure of choice is comparison of the results of primary excision and closure with the results of some form of open technique. Lawrence and Baker<sup>16</sup> reported a re-

currence rate of 37 per cent among those patients for whom primary excision and closure were done, while among those patients for whom the marsupialization procedure was used the percentage of failure was 16. On the other hand, Kleiman,<sup>17</sup> who has had considerable experience in the surgical treatment of pilonidal sinus, reported that when he used excision and emplaced steel wire for closure, the rate of recurrence was 10.5 per cent. When he utilized an open method the rate of recurrence was 17.5 per cent.

Palumbo and associates<sup>18</sup> in 1951 reviewed the literature on the surgical treatment of pilonidal sinus and calculated the rate of recurrence in respect to the type of operation used by various authors. He found that the rate of recurrence was 24 per cent when the primary-excision and closure technic was used, that the rate of failure was 17.1 per cent when the open method of excision and packing was used, and that the rate of recurrence was 24.1 per cent when the partial-closure method was used. He then compiled the record in his own series and found that the rate of cure was 75 per cent when the primary-excision and closure method was used, was 94.7 per cent when the excision and packing procedure was used, and was 100 per cent when the marsupialization operation was performed. The average stay in the hospital in his series was shortest among those patients for whom the marsupialization procedure was performed; it was 16.9 days. Although Palumbo believed the number of patients treated by marsupialization to be too small for statistical significance, his results from this method must be given due consideration.

On the basis of such information it is difficult to say which method is indicated in a given case. Palumbo's review would indicate that some form of an open procedure will result in a greater percentage of complete healing. Dunphy and Matson,<sup>19</sup> however, wrote that 60 per cent of all pilonidal sinuses can be treated by excision and primary closure. The remainder, he thought,

should be treated by the open method. They would consist of those pilonidal sinuses and tracts that are large and multiple, or those in which recent infection or obesity of the patient is a factor.

Buie and Curtiss<sup>1</sup> wrote that the former and his associates have used primary excision and closure for a small number of patients who had sinuses that were small and uncomplicated. They added, however, "that of all the varied surgical procedures advocated, the marsupialization method can be used more successfully in a greater number of instances than a closed operation."

My own observations lead me to believe that primary excision and closure have certain undesirable factors, such as the need of general or spinal anesthesia, the use of antibiotic agents in the postoperative period, a prolonged period of hospitalization, and the fact that in some series the rate of recurrence has been unduly high. In an effort to avoid some of these problems, I have developed a modification of the Buie marsupiali-

zation operation which is a form of open surgery and which to date has proved successful.

#### METHOD OF THE AUTHOR

The patient is placed in a prone position on the conventional surgical table. A break is made in the table so that a semijackknife position is obtained. The buttocks are separated by traction with adhesive tape. The anesthesia of choice is local infiltration of the subcutaneous tissue adjacent to the sinus tract with a 2 per cent solution of lidocaine hydrochloride (xylocaine hydrochloride). The maximum used is about 20 cc. of the solution.

The opening of the sinus tract is gently probed with a director, which is inserted the entire length of the tract (fig. 1a). The overlying skin is then incised along its entirety. The detritus contained within the sinus is removed by scraping the tract with the blunt end of the handle of the scalpel. Occasionally, wiping the floor of the tract

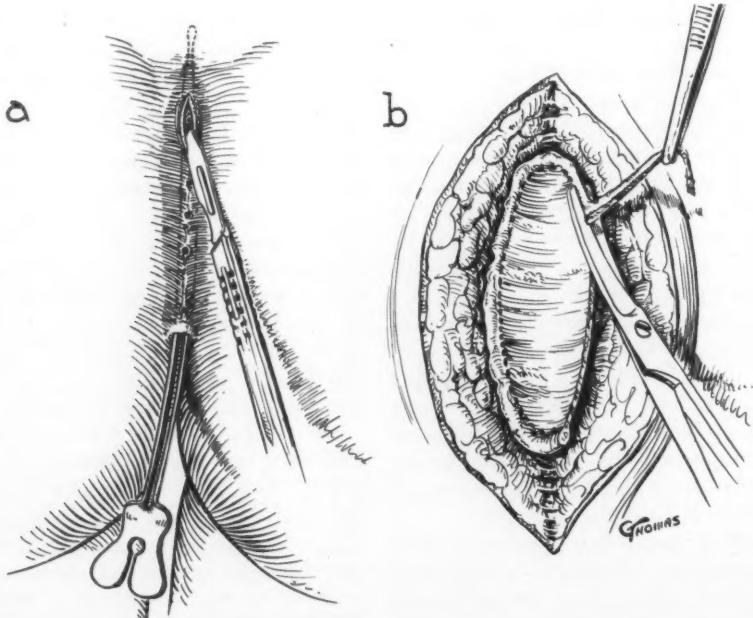


FIG. 1. (a) The director is inserted the entire length of the tract, and the skin which then overlies it is incised. (b) Sharp dissection frees the wall of the sinus tract from adjacent fat and subcutaneous tissue.

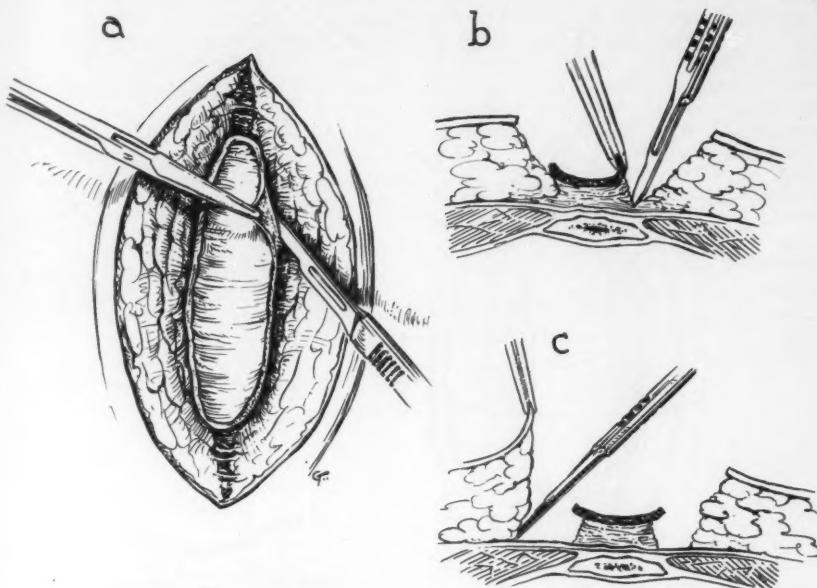


FIG. 2. The successive steps (a, b and c) show how excision is carried down to the attachment of the floor of the sinus tract to the fascia overlying the sacrum and coccyx.

with a gauze-wrapped index finger will suffice. Close inspection for daughter tracts is made; if such are found, they are probed and incised as indicated above. The walls of the sinus are then grasped at the edges with small Kelly clamps which are retracted toward the opposite side by the assistant. By sharp dissection the wall of the sinus is freed from the adjacent fat and subcutaneous tissue, down to the attachment of the floor of the sinus to the fascia overlying the sacrum and coccyx (figs. 1b and 2a and b). At the completion of this procedure the entire sinus tract can be lifted out of the confines of the wound. Sometimes a generous amount of the wall of the sinus will be found remaining. This excess portion of wall is dissected in such a manner that the remaining sinus tract will be equal in width and relatively flat along its entire course. When this has been done, the adjacent edges of the skin are sutured to the remnant of the remaining sinus tract by interrupted 3-0 silk sutures (fig. 3a, b and c). At the completion of the operation a small petrodatum gauze strip is

placed over the open wound and a gauze dressing is applied.

Postoperatively the pain of the patient is controlled by aspirin. The patient becomes ambulatory on the second day, at which time the wound is dressed and warm sitz baths are initiated. The patient leaves the hospital on the fourth or fifth hospital day.

Subsequently, inspection of the wound is made twice weekly at office visits, and the wound is irrigated with isotonic solution of sodium chloride and gently swabbed with a solution of bland detergent (phisoderm). The adjacent edges of skin are closely inspected for regrowth of hair; if hair is found it is shaved cleanly away. This last procedure prevents the hairs from acting as foreign bodies which would be detrimental to healing. Usually, the sutures are removed on the seventh postoperative day.

#### COMMENT AND SUMMARY

Twenty patients were operated upon according to the procedure described, and the condition of all was followed for 3 to 12

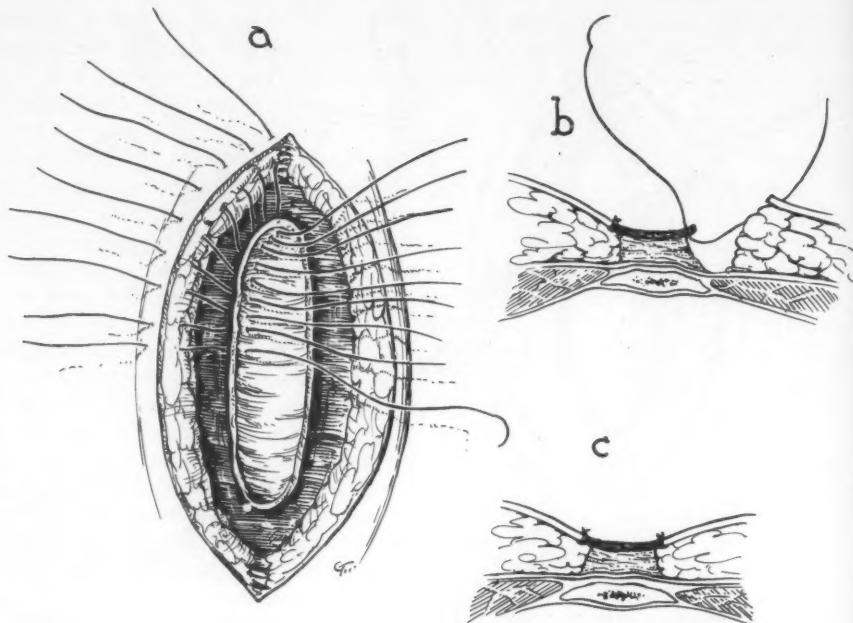


FIG. 3. The technic (a, b and c) of suturing the edges of the adjacent skin to the remnant of the sinus tract; the remnant was surgically prepared to ensure good approximation of the edges of the resulting wound.

months. No evidence of recurrence was noted. The length of time required for complete healing was 31.4 days. Lidocaine hydrochloride (xylocaine hydrochloride) anesthesia was used in all cases, and was found to be adequate. Postoperatively, the discomfort of the patients was relieved by aspirin; in only one case was morphine sulfate necessary. The average period of hospitalization for this group of patients averaged 5.1 days. Limited duty was permitted for 2 weeks, and all patients returned to full duty at the end of this period.

It is true that this series of cases is small, but it is my impression that the procedure described offers to the patient a minimal degree of discomfort during the postoperative period and lessens the chronicity commonly associated with the treatment of pilonidal sinus disease.

212 2nd St., S.W.

Rochester, Minn.

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# Military Medicine and Care of the War Disabled to World War I

By

COLONEL BENNIE A. MOXNESS, USAFR (MC)\*

**A** REVIEW of the early history of military medicine reveals much interesting information on the rise and evolution of military hygiene, surgery, medico-military transport, sanitary training and treatment of the wounded and of prisoners, but there exists a scarcity of material on the post-war care of the disabled individual.<sup>1</sup>

Many outstanding individuals have by their researches contributed to the better care, treatment, and understanding of the casualties on the field of battle or in civilian practice. This is important for military medicine and sanitation are in general the fruits of human culture; therefore, as history records periods of high level culture, good care was taken of the sick and wounded soldier, but as culture declined this care sank to a very low level. Much evidence of this tendency comes from the Roman period; however, from the middle ages to the present time, a continuous narrative account is difficult to prepare, but in general progress was slow until the great advances of the nineteenth and twentieth centuries.

## ANTIQUITY AND GRECIAN PERIOD

A brief review of military medicine in antiquity reveals that in prehistoric times one does not find, nor expects to find, organized armies for such warfare as was made by the cave men since that was in the nature of hand to hand combat with their own kind or with gigantic animals, etc. It appears later that in encounters between West European barbarians in the historic period, it was usually the custom to drag the wounded into safety and shelter where possible (Tacitus). But as is evident, a definite organization for the rescue and care of the wounded has sel-

dom been fostered except by experienced commanders of unique military genius. The great Mongol raids of the middle ages, the most devastating on record, sweeping all Asia and half of Europe, were characterized by massacre of the enemy's wounded, and fatalistic oriental indifference to their own. These are facts in anthropology.

In Egypt, the mother of civilization, warfare by means of organized armies was already a going concern. Of the Egyptian medical service in campaign, Diodorus Siculus mentions that on campaigns and expeditions out of the country, the sick were treated without cost to themselves, that the physicians received compensation from the state and practiced medicine from a formulary compiled by many learned individuals. Herodotus (5th Cent. B.C.) referred to the art of medicine as being highly specialized, each physician applying himself to only one disease. All places abounded in physicians, but this extreme specialism, a doctor for every disease, or at least for each part or region of the body, could only result in haphazard therapy. The Ebers Papyrus (1550 B.C.) showed these physicians at their best and revealed a knowledge of many diseases and their treatment.<sup>2</sup> In early Greek medicine references from the *Iliad* and *Odyssey* of Homer reveal that Homer employed the Old Ionian word for physician which meant originally "an extractor of arrows." The war surgery of the *Iliad* was what the mediaeval peoples called wound surgery, that is, the expectant treatment of wounds, which was carried out by a number of regular surgeons, and certain warrior chieftains who were adept in wound treatment.<sup>3</sup> The battle formations described in the *Iliad* reveal that after a primitive fashion the wounded were dragged or borne out of danger by their

\* Maxwell Air Force Base, Alabama.

comrades, sometimes placed under a tree to die, but usually taken to a chariot, which carried them to the hut-like barracks near the beach ships. Once there, they were given stimulating draughts of wine, the wound drink of the middle ages, their clothing was loosened near the wound, which was then washed with water, and if necessary further examined. An embedded spear or arrow point was either withdrawn or cut by widening the wound, the wound was further treated and bound up in a woolen bandage. Legendary as all this may seem, it was about the standard procedure followed in ordinary wound treatment up to the changes necessitated in ordinary wound treatment by the introduction of firearms in the middle ages.

The next most important source of military medicine of the Greeks were the writings of Hippocrates and Herodotus. However, over five hundred years intervened between the time of Homer and the advent of Hippocrates.<sup>4</sup> We are told in later campaigns how Cyrus detailed physicians to treat wounded prisoners. It must be noted that after the defeat of the Spartans at Sellasia (222 B.C.), the Greeks' last stand for freedom, every house opened its doors and all Lacaldeoncans united in refreshing the soldiers and in binding up their wounds, a trait more characteristic of Republican Rome than of Greece. Much was done for the health and stamina of soldiery by the splendid system of physical training and cult cleanliness of the Greeks, their gymnastics and bathing habits, which have become the ideal of our own time, both in military and civil hygiene.

#### ROMAN PERIOD

Beginning with the Roman era, the general outline and some of the information in this paper is based on a series of articles published in the *MILITARY SURGEON* by Colonel Fielding H. Garrison more than thirty years ago.<sup>5</sup> These articles reveal that in the citizen army of Republican Rome there were no medical arrangements for the care of the

sick and wounded beyond the ordinary wound dressing we have seen in the *Iliad*. In the days of the Empire, Greek medicine became established in Rome, so that the imperial armies acquired a well-organized medical establishment, which was the first and best in antiquity. When wounded in this early period, the Roman soldier was bandaged either by himself or by his comrades, apparently with materials carried on his person. It appears that the luckless wounded soldiers, whether Roman or barbarian, could do little but crawl to shelter and die. The Romans of the Republic did have a kindly family interest in their army, recruited from the citizenry without pay and stood by in the hour of need, when after battle they received the sick and wounded with open arms and relieved them by the generosity of their country.

As early as 502 B.C. it was customary for the Roman armies to take their wounded with them after a battle, to remain with them until they were in condition to be removed or could be left in a safe place. In 478 B.C. we find Fabius Maximus leaving his wounded in the houses of patricians, particularly of his own family. Around 323 B.C. it was sometimes dangerous for a Roman commander to neglect his wounded for his soldiers would not fight for him if he did. As we approach the period of Julius Caesar, evidence of existence of wound surgeons in the Roman army became more definite, but it appears that the great improvements to follow in Roman medico-military administration were bound up with the advancement of medicine in Rome by Greek physicians. It appears that in the tactics of *Claudius Aelianus* (100-140 A.D.) physicians were distinctly classed among the non-combatants. Also, that early in the Christian Era marked solicitude for the wounded, whether real or affected, became almost an official trait or social obligation of the Roman emperors. For instance, the crafty Tiberius (42 B.C.-A.D. 37) won the favor of his troops on his Illyrian campaign by taking with him physicians, litters, and a special bath for the

wounded. The aphorism of Aurelian, which was free medical treatment for the soldier, might well have been inscribed over every hospital of the times. For this royal solicitude for the disabled soldiers in a long succession of Roman emperors implies, in itself, a definite organization of hospitals and personnel for the care of the sick and wounded in campaign.

In Republican Rome the care of the sick and wounded soldier was based on the theory that some knowledge of medicine was expected of every Roman citizen. After the second Punic war, the wounded were carried by the Vilites to the rear, and to the tents or huts where their wounds were bound, or else they were billeted in the houses of the wealthy, or sent to a safe place, sometimes by wagon transportation. This was satisfactory so long as the fighting was near Rome, but when warfare was carried to distant lands other arrangements were required.

#### THE MIDDLE AGES<sup>5</sup>

The long interperiod between the downfall of the Western and Eastern Roman Empires, a period of nearly a thousand years (476-1453 A.D.), was called the middle ages. A brief presentation of some important pre-middle age events, which are of significance, will be given. In the ancient Greek cities the aouvaroi or permanently disabled war invalids were given small daily pensions, increased to large sums by Alexander the Great in his Indian campaigns. In Rome separate colonies were set apart for invalids, e.g., at Italica in Spain by Scipio Africanus, at Nicopolis in Asia Minor by Pompey, and also in Egypt.<sup>5</sup> The codex (438) of Theodosius (401-450 A.D.) mentions that veterans and invalids could hold lands without taxes and were provided with seed, fruits, cattle, and money to run their farms. In Byzantine some provision appears to have been made for asylums for disabled soldiers, e.g., the perhaps mythical retreat said to have been founded by Zctikos at the instance of Constantine I (306-337), the Labotropheion of Justin II (565-578) for

crippled soldiers. Vegetius, who lived during the reign of Valentine II (375-392 A.D.) published a treatise on military science in which he described the physical characteristics of the young recruit and the responsibilities of the commanding officer as follows: "The recruit should be young, but strength is more essential than size: He should be keen-eyed, with head erect, broad chest, long muscular arms, capable hands, slender flanks, with thighs, calves, and feet not distended by superfluous flesh but hard with accumulated muscle. It is best to discharge the unfit at once. It is the duty of the commanding officers to provide good water, proper food, and medical attention for the sick. The camp commander should look after the patients in their tents, the physicians who attend them and the expenses incident thereto."

In the period of the middle ages proper, representing nearly a thousand years, printing, firearms, and the mariner's compass were invented, but science sank to a comparatively low level. The reason for this is that with the downfall of Rome, Europe became practically nationless with her people continually at the mercy of fierce wandering tribes. Thus while the Orient maintained her commerce and her culture, Western Europe was reduced to a peasant status in respect to agriculture, commerce, finance, education, and means of self defense. It was a period in which everything had to be begun again, in which the older edifice of science was slowly scrapped, to be rebuilt from the ground up. One of the factors which saved European civilization was the growth of Christianity which had a refining influence upon morals and a softening effect upon manners. In the long run Pope and Emperor did much for medicine through the founding of universities, the enactment of laws regulating medical practice, the development of hospitals, and the organization of sick nursing. In Byzantine under its rigid military administration, the Emperor Leo VI (886-911) classed army surgeons as non-combatants. This emperor's treatise,

which was regarded as one of the best on military medicine, charged the commanding general on the care of the wounded. He was to give all possible care of his wounded, for if they were neglected, his soldiers might become timorous and cowardly before battle; also, he was to guard the health and welfare of his personnel which would otherwise be lost through negligence.<sup>5</sup>

Under the feudal system (after 814) the few capable physicians and surgeons of the time were attached to the persons of kings, popes, nobles, princes of the church, and other mediaeval overlords, and accompanied military leaders on their campaigns; but nothing whatever was done for the health and well being of the individual soldier. There was no organization for the relief of the wounded, and as late as the sixteenth century Montluc declared that the best thing that could happen to a fighting man in battle was to be killed outright by a good arquebusade.

During the crusades (1096-1272) nothing whatever was contributed to the improvement of military science. We know little regarding the medical arrangement of these expeditions; but it is evident from a description of Baldwin's wound that physicians were in attendance upon the leaders. In Byzantine it is significant that in this period, Alexis Comneus I (1081-1118) founded the Orphanotropheion, an asylum for sick and invalided soldiers.

In the Germania of Tacitus we get the first inkling of the part to be played by women in the care of the wounded during the middle ages. From these mediaeval epics and romances of chivalry is constantly sounded the special fitness of women as nurses for the sick and wounded. Care and treatment of the wounded became a particular function of great ladies. In the later epics and romances, whether of Germany, France, or England, women of high degree appear everywhere as nurses of the sick and healers of the wounded, the most celebrated being Queen Isold of Ireland who figures in all the Arthurian romances. In the *Chans-*

*son's de Gestes*, the *Parzifal* of Wolfran von Eschenbach (1204) or the *Mort d'Arthur* of Sir Thomas Malory (1485), it is either a hermit or the fair lady of some nearby castle who binds up the knight's wounds, when this service had not been rendered by one of his fellows.

In Froissart (1337-1410), the constantly recurring references to bringing the wounded to some house nearby and to getting them into a comfortable condition by suitable dressings, lead to the conclusion that this was common practice in the French Army in the period. Beyond these simple details, nothing whatever is related as to the further history of the wounded: Only the Homeric alternative—death or recovery. To England is due credit of making the first attempt at an organized medical service in the middle ages apart from the Byzantine Empire. Withington apparently considered there was good evidence that the wound of Prince Edward, when he was stabbed in Palestine, was exercised by an English Surgeon, and the success of this treatment perhaps inspired him with respect for the healing art, for we find him accompanied in the invasion of Scotland (1299-1301) by no less than seven medical men.

Military surgery was backward in mediaeval France, England, and Germany, for the reason that the general practice of surgery among the people was in the hands of barbers and bath keepers. It was not until 1372 that the lay barbers were permitted to treat wounds. As time went on, both the clerics and barbers were despised by the internists. However, most of the efforts at administration and organization were tentative and fitful. As the spirit of the times became more collectivistic one finds a most striking effect that of the development of public hygiene in which the rulers, physicians and public officers of the middle ages did their best work; these developments were necessitated by the terrible ravages of epidemic diseases notably the bubonic plague (black death) (1348), which destroyed over one-fourth of the human race, and other dis-

eases which were spread in epidemic proportions by wandering soldiery and outlaws through the squalid, crowded conditions of the population in the walled mediaeval towns. In mediaeval Spain military medicine was further advanced than is commonly supposed. Physicians and surgeons accompanied the Spanish armies on campaigns. In the chronicles of the conquest of Granada and the expulsion of the Moors by the armies of Ferdinand and Isabella, we find definite evidence of the establishment of camp hospitals and ambulance service by the Queen. Queen Isabella herself visited the wounded in the field. She also established ambulance services which (after 1453) were the harbingers of the more generous and expansive spirit of the Renaissance.

#### THE RENAISSANCE PERIOD

Even before 1600 and indeed following the reformation (1517-1534) most of the wars of the 16th century were religious wars. This was also the age which witnessed the Renaissance or revival of learning, and the new birth of western civilization; in medicine there was a revival of scientific anatomy by Leonardo De Vinci (1512) and Vesalius (1543) which was followed by a host of anatomical discoveries, all of physiological import, and led to the rehabilitation of operative surgery by Paré (1510-1590) and of experimental physiology by Harvey. While military surgery became a new thing in the hands of Paré, military medicine continued to lag behind, for before Paré, educated surgeons did nothing whatever for the common soldier, and few surgeons of lower caste, employed as business insurance for the mercenary troops and required by them, were usually men of small education who acted as barbers for the officers. But as the mercenary organizations gradually merged into the standing armies of Charles VII (1448) and Maximilian I, the number of medical personnel for the rank and file was increased and better medical administration was thereby secured. Toward the end of the 14th century, over and above such evacu-

ation of the wounded by comrades as we read of in Froissart, it had become customary to hire a number of barber-surgeons to treat the wounds of ordinary soldiery. There began to appear in the city archives of the Swiss canton and elsewhere, evidence of the authorized employment of barber surgeons to treat the wounded at Public Cost (1476-1525).<sup>6</sup>

"In his careful study of the care of the wounded in the wars of the Swiss confederation<sup>6</sup> (1315-1798) Dr. Conrad Brunner has demonstrated a fact heretofore unknown to historians, namely, that Switzerland outdated all other nations of modern Europe in state care of the wounded; that is in actual ordinances notifying the individual soldier that his government was behind him in respect to his welfare on the field of battle.<sup>6</sup> Brunner's researches show that, from the time of the battle of Laupen (1339) onward, the accounts of the Swiss archives are replete with disbursements of money for the care of the wounded and their dependents. In the earlier period these consisted of payments to various barber surgeons for attending the wounded after battle," e.g., payments made by the City of Berne after the Gugler War (1376), the siege of Burgody (1383) and the Zurich wars (1436-1450) or by St. Gall after the siege of Rheinggg (1405). "This gradually became custom in all the cantons. In the archives of the Zurich wars, we find the Council of Lucerne authorizing that the wounded should continue to receive their pay as long as the troops remained in the field (1444)." "During the Burgundian campaign (1474-1477), a similar ordinance issued by Basel, detailed two barber-surgeons to accompany the troops, with provisions for continuing the pay of the wounded for the period of the war (1474). In an order of the day following the battle of Grandson (1476) it was promulgated that all living expenses of the wounded and all costs for medical attendance should be paid 'in moderation' out of the common purse (1476) with a subsequent protocol of account, showing the expenditure of 300 guilders for 200

wounded or 1½ guilders per capita. After Grandson, the Council of Lucerne further decreed that the property of children orphaned by the war should be carefully guarded by the state, with restitution in case of embezzlement by officials: that the state should pay not only for treatment of the indigent wounded up to recovery, but should also pay for the maintenance of themselves and family until they were able to resume work." This is also verified by the city accounts of 1476. "After the battle of Domach (1499) the Bernese devoted all the booty, a sum of 800 pounds to the maintenance of the wounded and of the widows and orphans of the slain." The account books of both Berne and Solothurn (1499-1500) show that these items continued to be paid out of the city funds. In the Italian campaign (1500-1529) the cost of caring for the Swiss wounded was borne by the city of Nulan, e.g., 4 guilders per capita after the taking of Pavia (1512). "After the battle of Kappel (1531) the city accounts of Zurich (1531-1532) show a disbursement of 1538 pounds for care of the wounded—bandaging material, tips to surgeons' apprentices, moneys advanced to the wounded themselves and expenses of wagon transportation amounted to 16 pounds or more. The non-transportable wounded were treated at public cost in an improvised hospital in the cloister of Oestenbach." In the so-called period of "capitulation" (1531-1600) in which the cantons hired out their troops to France, Spain and the Papal See the financial obligation of caring for the sick and wounded is expressly stipulated in the tightly drawn contracts between the separate cantons and these neighboring states. On account of the fierce spirit of the times all medical personnel bore arms and before 1589 the field apothecaries were not even listed among the medical personnel but participated as combatants. Contrary to French and German practice, no attempt was made to collect or relieve the wounded until after battle. The so called Sempach Pact (1393) concluded between nine cantons, specifies that

the wounded should not attempt to escape during a battle, but to remain steadfast within the lines until the end of the battle, lest they might incur the penalty of desertion. Fighting in these early days was desperate and bloody. The Swiss confederates were required to take a barbaric oath to spare none of the enemy and permit none of their own men to be captured. This was customary until the early sixteenth century, when return of prisoners and wounded was permitted. Once this humane principle was accepted, it was well lived up to, and it is significant that the Red Cross idea was eventually established by a Swiss, Henri Dunant. During World War I the peoples of the different Swiss Cantons are said to have displayed the greatest charity toward war prisoners and refugees within their frontiers, paying for their maintenance out of their own pockets, even to their own impoverishment; an object lesson in promoting better international relations between the nations of the civilized world.<sup>6</sup>

Frolich regards the instructions to medical personnel by Fronsperger (1555) as the basis of medical regulations of the modern German Army. Here we have shown a spirit of organization and a sense of discipline which showed considerable advance even upon Roman and Byzantine standards. In the armies of Charles V (1519-1556) the sick and wounded were sent to the baggage train and put under tents, where they were attended by physicians or barbers and nursed by female camp followers. On breaking camp, wagon transportation was employed for the light sick and slightly wounded, while more desperate cases were sent to the hospitals in the nearest towns. While in the field the sick or wounded continued to receive their pay, and Charles is highly praised for his fatherly concern for the sick or wounded by European historians. At the end of the century, stationary military hospitals, with ambulance service for first aid, were established by Sully (1597) in the reign of Henri IV, and were so well managed that even high officers were content to

be treated in them (Brunner). Annuities were sometimes granted to the severely wounded in this period, and by the time of Henry VIII (1509-1547) a definite system of pay for soldiers and army surgeons was established.

Heizmann considers that the siege of Metz (1552) represented the high water mark of medico-military administration in the 16th century. The defense of Metz became the marvel of Europe, it probably saved France from destruction, and in many ways besides political, its effects were lasting. The humanity of Guice towards both well and sick was remembered at the siege of Theronanne (1553) by the Spanish who, on being reminded of it by the French, courteously saved all prisoners, says Brantome. After this the custom of massacring prisoners who were not reserved for ransom gradually declined, and this was the germ from which arose the spirit that culminated in a little over 300 years, in the articles of the Geneva Convention.

To sum up, Renaissance medicine requires mention of three great path breakers, three assertive shaggy figures to whom our profession owes much of the social position and intellectual liberty it now possesses. Of these Paracelsus (1493-1541) founded chemotherapy and stood for rational wound treatment. Vesalius (1514-1564) sometime a military surgeon in the armies of Charles V was the founder of modern anatomy. Ambrose Paré (1510-1590) throughout his long life managed to remain honest and humane. Paré was considered among the greatest of military surgeons, through his ability, his large humanity and insight; and for the first time in military history a medical vassal of a great captain went out of his way to succor the ordinary wounded soldier.

The seventeenth century was an age of extraordinary activity in science, literature and art, but the practice of medicine, hospital management, and organized care of the sick and wounded sank to a very low level. The military medicine of the period shows no great advance over that of the 16th

century due to the rigid divorce started by Galen between medicine and surgery, and maintained by the Arabians. The bitter rivalries between physicians, surgeons, and barbers continued.

In considering the wars of the 17th century and their effects upon military medicine, one finds it best to arrange the scattered materials under the different countries.<sup>5</sup> In France, about the time of Henri IV, appears to be the starting point for "a number of attempts by Henri IV, Louis XIII, and their ministers to improve the condition of the wounded and disabled soldier by the foundation of permanent institutions." As long as the siege of Armens (1597) lasted, Sully himself went there regularly each month with a fund of 1,500,000 crowns, a goodly portion of which was destined for the hospital, frequented mainly by officers "and persons of quality," while provisions were made for the care of the wounded in neighboring villages. By edicts of Henri IV (1604-1611) the Maison de la Charite Chretienne founded in Paris by Nicolas Honel was opened to destitute and disabled soldiers, with funds and administrative board, and this privilege was further extended to widows and orphans of soldiers killed in battle, but after the King's death in 1610 the arrangements went into abeyance through lack of funds. Edicts during the reign of Louis XIII (1611-1643) revived the ancient carlovingian droit d'oblot, in virtue of which disabled and infirm officers and soldiers were assigned as lay brothers to monasteries, where they eked out their existence as sweeps, gardeners and bell ringers.

Richelieu, by 1633, had advanced the idea of founding a disabled soldiers' home or maison des invalides, construction of which was begun in August 1635. But after dedication the project was suddenly abandoned and came to nothing before the definitive opening in 1676. The disabled invalids who had paraded the occasion with great pomp were returned to the monasteries to resume the pensioned status of the oblat. During the reign of Louis XIV, funds were fre-

quently found for assisting the wounded in the field. Also, pensions of 30-50 livres were granted to disabled soldiers. Officers received 300-400 livres. In spite of these remarkable advances, the condition of the wounded in the field and in hospital left much to be desired while the streets of Paris and the larger towns swarmed with lame, crippled, infirm, and mutilated soldiers of whose physical status, Collot's etchings depicted as that of squalid beggary.

The poor construction and administration of military and civilian hospitals, which often consisted of little else than spacious halls in which the squalid patients were crowded three in a bed, made them nests of infection. They held out little attraction to those who could get along without them, and engendered the well-considered horror of hospitals which persisted until recent times. For instance, Rene Tenon (1788) published a series of memoirs on the hospitals of Paris which contained his famous description of old Hotel Dieu which was a veritable hot bed of disease. There were some 1,220 beds, most of which contained from four to six patients, also about 486 beds for single patients. The larger halls contained over 800 patients crowded on pallets or often lying miserably on heaps of straw, which was in vile condition. Septic fevers and other infections were the rule. The average mortality was about 20 per cent and recovery from surgical operations was a rarity. The same thing was true of many other institutions of size, and it was not until John Howard made his exhaustive studies of the condition of European hospitals, prisons, and lazarettos (1777-1789) and after Tenon had published his report (1788) that any attempts at reform were made.<sup>2</sup> Funds disbursed for care of the wounded were frequently embezzled by officers bent on libertinage in the capital, and many of the invalided preferred vagabondage to seclusion in convents. The increasing number of mendicants in the capital finally induced Louis XIV to carry forward the old plan of a "Hotel Royal des Invalides," which

was at length established by edict of April 1674, with the Secretary of State for War as Director. The institution was opened in 1676 with the inscription "Laeso et Invicto Mulite" upon the imposing facade, but even here the inmates were described by Vauban, Langle and other observing individuals as poorly clad, ill nourished, crowded two in a bed, and a general eye-sore to the public. None the less these developments were of the utmost importance as precursors of the final stage in which the care of the wounded and disabled became a permanent function of the government. Through further efforts in France the medical personnel of the army had increased to the extent that at the battle of Seneffe (1674) the intendant, Robert, was able to assign 230 military surgeons to three villages, with nurses and material adequate for the care of large numbers of wounded. In 1683 it was ordered that the sick be lodged before officers in campaign.

In Sweden under Gustavus, considered the greatest military genius of his time, and who was killed at the battle of Lutzen (1632), the medical arrangements were remarkable. For instance, the sick and wounded were usually left in captured towns to be treated in local hospitals, and wagon transportation of the wounded was sometimes employed. But in spite of Gustavus' care and forethought, his armies were steadily decimated by infectious diseases. Recruiting was effected by impressment of the lawless and worthless among the population. Pay of sick soldiers was continued three months "if the flag still waved," but little is known of arrangements for the care of the wounded.

In England a parliamentary resolution passed on March 6, 1643, empowered the raising of parochial funds for the relief of disabled soldiers and the widows and fatherless children of slain persons.<sup>3</sup> On October 27, 1679, a royal hospital for aged and disabled soldiers was established at Kilmainham, near Dublin. A private retreat for the same purpose had been established at Herford by Sir Thomas Coningsby in 1614. Chelsea was founded in 1663 and Green-

wich (for seamen) in 1695. Upon the accession of James IV (1685) a regulation was issued granting a pension of one year's pay from the "King's Bounty," for the loss of an eye or limb upon certificate of the chief medical officer of the army, now called the "surgeon general."

#### EIGHTEENTH CENTURY

The seventeenth century was a period of almost continuous wars, of intense individualism in science, set off by a distinct backward trend in practical medicine. The eighteenth century brought in a phase of relative quiescence, interrupted at intervals by brief wars, but tended in the end to a social order in which everything was to be regulated by sober sided method and system. In the 18th century the administration of military medicine became a definite function of government, and in consequence, limited periods of voluntary enlistment, regular medical examination of recruits, regular salaries for officers, government quarters for troops, regular uniforms, a daily ration, the military regulation of hospitals, printed orders and bulletins on military paper periodicals devoted to military medicine, and regular schools of military medicine (in Prussia and Austria) became part of the established order of things.

While Frederick the Great's (1740-1786) regard for medicine and physicians was small, due to the fact that he got little relief from the many body ills that tormented him all his working life, he was perhaps the most active of all great soldiers in forwarding medical administration. Frederick's rule was first to relieve his own wounded, then those of the enemy, to whom he seems to have been most humane in his early campaigns. He presented 40,000 thaler to the Charite (1746), founded the Invalidenhaus for instruction of medical pensioners or cadets in 1748, increased the number of garrison hospitals (1765) and the number of pensioner surgeons from 9 to 16 (1779). In July 1786, shortly before his death, he ordered a complete inspection of all military hospitals with a view to reorganization and better care for the wounded.

This reform was carried into effect during the reign of his successor, Frederick Wilhelm II (1786-1797).

At the battle of Dettingen on June 27, 1743, a keen sighted Scotch officer, Sir John Pringle (1707-1782), brought about an agreement that both the French and English military hospitals were to be regarded as neutral and immune to attack during the engagement. This was considered a temporary Red Cross agreement. This agreement was strictly observed on both sides during the campaign, but was afterward neglected. However, it was still hoped that on future occasions the contending parties would make it a precedent. However, the Berlin exposition on military medicine (1914) indicates that there were no less than five temporary Red Cross agreements between 1743 and 1864. During the early part of the eighteenth century constant attempts were made to arrange some disposition of the wounded which would not interfere with military operations. For instance, at the battle of Fontenoy (1745), the wounded were treated on the front line by regimental surgeons, then collected at ambulance stations where major operations were performed, and finally evacuated to hospitals in cities further back, an almost perfect system. Also, the personal hygiene of the soldier, his clothing, food, shelter, hospitals, and general sanitary welfare were favorite themes of study with the military authorities of the 18th century and came to be summarized in compact treatises such as those of Pringle (1752), Brocklesby (1764), Monro (1764), Colombier (1772), and others. A book by Sir G. Ballingall (1780-1855) gives a clear picture of military surgery prior to the time of Lister. He also covered the subject of selection of recruits and considered the most eligible time for enlistment as<sup>3</sup> from 20 to 25 years of age, for boys only filled the hospitals and not the ranks.

#### THE NINETEENTH CENTURY

In spite of the constant blood shed, the spirit of the age, the "rights of man" was,

for western Europeans, a subject of intense enthusiasm which thrilled even the passive Wordsworth. In variety and extent of achievement, this century surpassed the Renaissance period with its philosophers, scientists, and thinkers of the first order. In the period of the Revolutionary and Napoleonic wars, the general principles of modern warfare were developed with startling suddenness. The medical personnel raised for these huge armies was large, but of unequal merit, poorly trained by reason of the dissolution and non-existence of French medical facilities during the period 1792-1803 and badly hampered by the arbitrary and irresponsible rulings of the National Convention. Various laws were enacted, mostly pernicious. The more ominous ministerial regulation (May 20, 1796) took the authority from the chief surgeons to establish army hospitals and transportation of the wounded, and gave it to the "commissionnaire ordonnateur," to whom all medical officers were subordinated, while chiefs of medical service in hospitals were forbidden to have anything to do with its administration. The effect of this arrangement was to demoralize the medical service and drive all worthwhile medical officers away from military hospitals in the field.

In the history of military medicine, Napoleon is to be regarded as a commander who accorded to favorites, as Larrey or Perry, every opportunity to forward medical administration according to their light, but he was too preoccupied with his various ambitions and plans to give it any detailed attention. Napoleon's conversations with Corvisart reveal the same contempt for medicine that we find in Frederick, but he was trained as a soldier himself and was by no means lacking in a certain "grandeur d'amé" towards his medical officers and wounded men. Of hospitalization of the sick, we hear but little, for military hygiene in the modern sense was non-existent, and the sanitary status of hospitals was almost the lowest in recorded history. Napoleon's campaigns presented an appalling mortality from disease. He

often visited the wounded in hospitals and listened to reports of his chief medical officers after each battle, but made florid promises which he sometimes forgot or was unable to keep. In spite of various efforts to promote better medical service, the terrible break-down in hospitalization during the epidemics of 1813 was attributed to the extreme parsimony of the General Intendent, M. Daru, toward the medical corps. The vice of the Napoleonic system (as with the Prussian General Staff in the First World War) lay in the mistaken belief that a nation in arms is an inexhaustible reservoir of personnel.

The most eminent medical officer of the Napoleonic period was Larrey (1766-1842), chief surgeon of the Grande Armee and inventor of the flying ambulances. Larrey was three times wounded for which he won the esteem and affection of his chief. Larrey took part in no less than 60 battles and 400 engagements, and indeed devoted his whole career to military surgery and to the welfare of the wounded soldier. But in spite of the big humanitarian spirit of Larrey, the sick and wounded were frequently abandoned through lack of transportation on Napoleon's forced marches and retreats, or else, as Duncan says, "Were stuffed in buildings of every sort and left to die." In his account of the Peninsular Campaigns General Foy mentions that they lost four times as many men through the disorder inseparable from their system of warfare as from the fire and steel of the enemy.

The part played by England in the Revolutionary Wars was mainly at sea. In this Peninsular War the average sick rate was 210 per 1,000, the principal diseases being fevers, dysentery, rheumatism, and respiratory infections, with hospital gangrene and tetanus among the wounded. The death rate during 1808-1814 was 118 per 1,000, the total losses being 24,930 out of 61,511 from disease, and 8,889 from battle casualties. It is startling that of the 4½ million soldiers engaged in the Revolutionary and Napoleonic armies during 1792-1815, about 2½ million

died in hospitals and 150,000 were killed in action. For instance, in the Egyptian Campaign (1798-1800), Bonaparte lost 4,758 out of 30,000 in action and 4,157 from disease of whom 1,689, including 40 medical officers, died from the bubonic plague. Between July 1813 and March 1814, there were 133,965 sick and wounded in the Prussian Military Hospitals, and of these 15,748 died, 84,805 were discharged cured, 3,177 were invalided, and 394 unaccounted, leaving on hand in March 1814, 6,422 sick and 23,149 wounded.

The Crimean War (1854-1856) has perhaps the greatest teaching value for military medicine. The Crimean War shows the highest battle losses per thousand (among the Russians) and from disease (among the French) of all the wars in history (largely due to cholera, typhus fever, scurvy, dysentery). The British entered the Crimean War in a state of unpreparedness. Parliament and the public soon took hold of the situation and sent out clothing, supplies, and transportation in profusion, and at the insistence of Sidney Herbert, Florence Nightingale, with a corps of trained nurses, established what is known as modern nursing. The lesson of the Crimean War is that the central civil administration will do little for the successful conduct of a campaign if it neglects its primary duty of sending all necessary supplies, reinforcements, and medical aid to forces at the front, yet hampered commanders and medical officers with orders and suggestions based on academic assumptions and insufficient knowledge of actual conditions at the theater of war. An account of the horrors of the battle of Solferino, published

in 1862 by Henri Dunant, led to an international conference of the Red Cross societies at Geneva in 1863 and to the Geneva Convention August 22, 1864, by virtue of which fourteen signatories pledged their respective nations to regard the sick and wounded, also the army medical and nursing staffs, as neutrals on the field of battle. This convention was observed all over the world up to the First World War.

The Franco-Prussian War (1870-1871) was the first war of magnitude in which the mortality from battle casualties (among the Germans) exceeded that from disease—a condition which in general existed into the World War I era and was a tribute to military medicine. But in the rehabilitation of the wreckages of war, perhaps we were not so fortunate. "For it is now a recognized part of the program of national defense to organize methods of post bellum relief at the same time that activities are initiated for the persecution of hostilities."<sup>5</sup>

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#### SUPPORT CIVIL DEFENSE WEEK September 9-15

## Fitzsimons Goes to College

By

MAJOR DORIS F. JENSEN, ANC, U. S. Army

(Two illustrations)

IT WAS 1800 hours, and another busy hospital day was slipping slowly into early twilight. Along the shaded walks that surround Fitzsimons Army Hospital, young men and young women hurried to the East Building D-5, briskly and purposefully. They looked very much like a group of college students with their gay jackets and armsful of books—and so they were!

This was not a command performance but a voluntary participation in the educational program at Fitzsimons. Many of the students were members of the Army Nurse Corps, for the Army Nurse has come to realize that she is not a professional woman unless she maintains her status by constant professional and personal growth. She appreciates that the major purposes and needs of the profession as a whole are her personal needs and purposes as well. No longer need she envy her civilian sister who can satisfy her intellectual and cultural desires by attending the college or university of her choice, for here the Army Nurse has a campus at her fingertips. The education she re-



U. S. Army Photo

FIG. 2. CONFERRING ON GROUP DYNAMICS IN ADVANCED SPEECH CLASS. At desk: Maj. Evelyn M. Patterson (left) and Capt. Leona R. Wolf. In class: (L to R) Mrs. Lola Herndon, 1st Lt. Nellie E. Guffy, Maj. Dagny V. J. Anderson, Maj. Florie M. Larson, Capt. Florence J. Mikowski (hidden), Prof. W. M. Corbin (Instructor), Denver Univ., Maj. Bernice D. Brandt.

ceives at Fitzsimons, in the well integrated program, provided as a Community Service by the University of Denver, is in keeping with the highest standards of nursing education. The nurse has only to supply the "will to do."

The desire to improve oneself, to belong to the group, is innate in all of us, and participation is infectious. Oftentimes a prospective student will hesitate to enroll because of her long absence from the classroom; she may be reluctant from lack of association or personal uncertainties, or from fear of others that may arise from such reasons as have just been mentioned, or from traumatic contacts of the workaday world. Possibly she has a fear of ideas issuing in part from conservatism, from the sluggishness of routine, and in part, no doubt from the strong cultural compulsions of our system.

Oftentimes these fears add up to a tenacious mindset or resistance to the assimilation of new ideas. They may even stand as a



U. S. Army Photo

FIG. 1. CLASS—PRINCIPLES OF PUBLIC HEALTH. (L to R) Maj. Gladys M. Welch; Captains Marjorie J. Conly, Janet A. Gottlob, and Mayna R. Allen; M. M. Miller, Ph.D. (Instructor), Denver Univ.

block to the learning process and effective adaptations to change. However, the nurse student will find here the reassurance and the restoration of confidence that she needs. Another handicap is the lack of continuity in her pursuit of education, the fact that she may have been in and out of the classroom many times, with frequent interruptions due to her military assignments. As a result the student is seriously confused as to what the academic program has to offer. Fortunately for us, here at Fitzsimons, expert counseling and guidance is readily available and is enthusiastically and cheerfully given. Once the program has been started, the eagerness for learning and the spirit of inquiry born of years, perhaps, of academic abstinence, motivate the student to continue on to the realization of her goal.

The university instructors on the Fitzsimons "campus" are schooled in adult education and recognize that the most precious ingredient the nurse brings to the classroom is experience. In the lifelong process of constant change, older, as well as younger, persons acquire knowledge, skill and habits. They are capable of changing their ways of thinking, feeling and doing because an adult is a cumulative dynamic integration of experience. Thus the nurse student gives, as well as receives and she realizes that the change which is being effected within herself is good—that it is satisfying an undefined need.

Education may cost financial sacrifice and mental pain, but both in money and life values it will repay every cost one hundred-fold.

#### NEW SURGEON GENERAL, UNITED STATES PUBLIC HEALTH SERVICE

**O**N AUGUST 3 President Eisenhower appointed Dr. Leroy E. Burney as Surgeon General of the United States Public Health Service for a four-year term. He succeeds Dr. Leonard Scheele who resigned, effective August 1, to be president of Warner-Chilcott Laboratories.

Dr. Burney is a native of Indiana having been born in a town of the same name on December 31, 1906. He received his bachelor and medical degrees from Indiana University, the former degree in 1928, the latter degree in 1930.

On graduation from medical school Dr. Burney entered the United States Public Health Service as an intern with station at the U. S. Marine Hospital, Chicago, Ill. From 1931-1932 he pursued a course of instruction under a Rockefeller Fellowship at Johns Hopkins University School of Hygiene and Public Health for which he received his M.S. degree in Public Health. At the time of his appointment as Surgeon Gen-

eral Dr. Burney was Assistant Surgeon General and Deputy Chief, Bureau of State Services.



Dep't H.E.W.

## 805TH HOSPITAL CENTER

(FIELD OPERATION SUMMER CAMP, FORT GEORGE G. MEADE, MD.)



U. S. Army Photo

Standing (L to R) Capt. Rothrock, CWO Showalter, Maj. Houk, Capt. Groom, Lt. Col. Prager, Brig. Gen. Frank E. Wilson, Maj. Bixler, Col. Leshear, Maj. Morley, Capt. Baker.

Kneeling (L to R) Sgt. Weaver, Sgt. Mellott, M/Sgt. Gibson, Sp. Becker, M/Sgt. Epstein, SFC. Kissel, Sp. New, Pfc. Roberts, Sp. Lutz.



U. S. Army Photo

(L to R) Col. Francis Kintz (2d Army Surgeon); Brig. Gen. Frank E. Wilson (Commanding General, 805th Hosp. Center); Col. Melvin F. Eyerman (Commanding Officer, 68th Medical Group).

## EDITORIALS

### Convention Issue

THE October issue of *MILITARY MEDICINE* will give the program for our 62nd Annual Convention to be held at Hotel Statler, Washington, D.C., November 12, 13, and 14. Traditionally we call the October issue the *Convention Issue*. It gives a preview of what is waiting for you when you arrive at the registration desk.

A convention means months of planning and hard work for many to make the three days that you spend here in Washington profitable from an educational standpoint and enjoyable from a social viewpoint. You can be assured of both this year. With Admiral Dana at the helm and his two mates, Captain Jobe and Commander Jones, on deck, assisted by a large group of willing and capable helpers aboard, the ship "62nd Convention" will arrive fit and trim on the above dates. Now plan to come aboard and participate in the events.

Each member will receive a letter this month. Cards will be enclosed for hotel reservations should you wish to stay at the Hotel Statler, and there will be a card for the Ladies Events. Be sure to get these back promptly. Now what about those who are not members. You, too, are welcome to the scientific program and exhibits. We would be very selfish if we denied you that privilege, and this Association has never been known for being selfish. There are limitations that must be placed on the social events, of course, and members must be given preference.

If you have not already made plans to be with us on November 12, 13, and 14 better do so now.

### "Fatal Fallacies"

**I**N DRIVING, there is no substitute for self-reliance. Safety belts, special padding, and other mechanical features all help, but reliance on them is a fatal fallacy. Reliance on the other driver or pedestrian to follow the rules of the road to the letter is a fatal fallacy. And, by definition, a fatal fallacy is a mistaken belief that leads to disaster.

This is not to dismiss all the advances that have been made in alleviating the seriousness of accidents. Every one of these steps is a stride in the right direction. But it is the driver's mind harnessed to his reflexes, plus his body harnessed to his seat, which is going to produce fewer accidents. It is brain-power, not horsepower; the power to steer and brake, not power steering or power braking, which is the ultimate solution of the safety problem.

Again in 1955, we saw repeated the fatal fallacy of safety by decree. While the President's official S-D Day served a worthwhile purpose in focussing attention on our distressing habits, it did not cause the slightest decrease in the day's casualties. With individuals, business, and all media of communication emphasizing safety, the nation's motorists and pedestrians went about their business as usual. And, as in 1954, S-D Day was followed by the most devastating Christmas weekend in history.

Stricter enforcement is a welcome trend, as it places serious practical difficulties in the path of the habitually careless driver. However, it would be a fatal fallacy to believe that punishment, any more than reward or appeal to the higher instincts of individuals,

is the sole solution to a mounting accident rate.

Safety is more than a slogan. It is an attitude of mind and a way of life. And as the road of all virtues is strewn with temptations, so is the path of safety. We call them fatal fallacies. The following are a few of the deadliest:

Pitting speed of reflexes against the modern automobile's super-horsepower.

Feeling free to "pour it on" on the straight-away, no matter how clear the day, how dry the road, how straight or wide the highway.

Driving while intoxicated or weary in the vain hope that the homing instinct will assure safe arrival.

Reliance on built-in safety features to compensate for lack of care.

Believing, with the supreme confidence born of experience, that rules of the road are meant for beginners.

These are some of the fatal fallacies which caused grievous death and injury on the highways of America in 1955. More than 80 percent of all casualties occurred in accidents where there was some driving violation.

This leads to the inescapable conclusion that accidents do not "just happen." And to believe that avoidance in the past means immunity in the future is the most fatal fallacy of all.—*The Travelers 1956 Book of Street and Highway Accident Data*.



**UNITED COMMUNITY CAMPAIGNS**

**Give...the United way**

## Around the World

### II

By

CLAUDIUS F. MAYER, M.D.

**A**MERICA of the Latin People, though much of it is situated between the same tropics of Capricorn and Cancer, is a struggling with *geopathological problems different* from those seen in Africa or in the Indies. The majority of its population is residing in mountainous regions, in areas from 300 to 15,000 feet above sea-level, or in ports near the ocean where the cities are well ventilated by the dominant winds. The people are also exposed to the rigors of the austral winter. Thus, the diseases and the problems of tropical medicine are made peculiarly Latin American, and distinct from the ailments observed in the tropical lands of the Old World.

Indeed, many of the *medical problems of Latin America* are also social problems since they concern a very poor population. In the opinion of a French physician, who recently passed through various countries of South America, neither the mestees nor the mulattoes of the hybrid population of Latin America are yet fully equipped to the discipline of modern life and the demands of modern civilization. Hence, both preventive and curative medicine are facing highly complicated tasks in this segment of the world.

Let us take the *problem of blindness*, for instance! In Latin America, there is at least one blind among a thousand persons (exactly 1.3 *pro mille*). In Argentina, Brazil, Colombia, and Uruguay, blindness is officially defined as a condition in which a visually defective person is unable to guide himself. Thus, a large number of less severe visual deficiencies that make up the population of the schools for the blind in North America is absent in the Latin American institutions. Persons with partially defective sight are considered normal; many of them are members of rich families who are always willing to contribute materially to the

welfare of the truly blind. Much blindness is the result of quackery. Timely treatment of blinding diseases of the eye may be also missed because some of the afflicted are expecting miraculous cures.

The *Latin American institutions for combatting blindness* are exemplary. The best organization for the welfare of the blind is in Buenos Aires, according to the travelling physician. The schools for the blind are also well supported in Brazil by the rich philanthropic families. Thus, the "Padre Chico School" in São Paulo is one of the richest in the world. Rio de Janeiro built its rich school for the blind right at the beautiful bay. Many smaller towns in the Latin American countries have their own schools for the blind, as Monterey and Guadalajara in Mexico, or Merida in Yucatan.

Geographical differences influence health conditions and medical practice in other parts of the world, too. Thus, in Trinidad, Jamaica, and the rest of the *British West Indies*, the practitioners have to face types of illness and conditions of health rather different from those seen at the British Isles. The specific diseases are tuberculosis, venereal diseases, yaws, leprosy, and malaria, some of them directly related to the high rate of alcoholism. Tropical infestations, chiefly with helminths and hookworms, are common among agrarian workers. Deficiency diseases and enteric fevers also take their toll.

The general *hospital service of the British West Indian Government* is said to be unsatisfactory, and many a West Indian would go for medical treatment rather to the United States or Canada than to the local hospital. The treatment and control of the specific diseases is, however, well organized and efficient, except for a shortage of staff. Aside from the more or less dissatisfied physicians

who—for salaries ranging from £800 to £1800—work for the Government either on a contract basis or as permanent Civil Servants, the general practitioners of the West Indies are true consultants and diagnosticians. The average earning of a good practitioner is £3,500. A large part of their task consists in trying to avoid appearance in Court as witnesses of accidents and assaults.

The great majority of practitioners in the British West Indies are West Indians who were educated in Canada or Great Britain. A medical school was just recently established in *Jamaica* at the University College of the West Indies. As a mark of British colonialism, high government medical posts and key positions are still filled by doctors and nurses coming from Great Britain.

Various visits of doctors from western countries to Russia and *vice versa* brought to light the doctors' ignorance about the medical progress of their neighbors. The ignorance is mutual:—westerners know as little about *Russian medical research* as the doctors in *Moskva* know of modern progress in the West. In Italy, an organization was established some time ago to popularize the Russian medical achievements in Italian. This organization called "*Bibliografia Medica Sovietica*," had also arranged various convention for the information of Italian physicians about Soviet medicine and biology.

The topics of one of the recent meetings of this organization also included the *problem of painless childbirth*, a subject which had already caused much comment in Europe. (Thus, in several Swiss clinics, special department have been already established for the study of painless labor.) As is well known, painless delivery is the result of painstaking conditioning of the pregnant mother who, at the end of a long period of physiological and psychological training, will look upon labor as a natural, painless process. (The word "pain" is never uttered by the instructor in front of his trainees!) The method had been advocated by the Russians, Pavlov and Nicolaev. One variety of the

method had been practiced by the Englishman, Read. European obstetricians have been experimenting with painless labor for more than five years.

*Painless labor* was also the main topic of a *symposium at the Mendel Institute* at Roma in January of this year, when Pope Pius himself encouraged this new development in modern obstetrics. The fertile Italy held several other conferences on painless labor, and, at the instigation of the director of the Obstetrical Department, the University of *Turin* opened a center for the *psycho-physical preparation of pregnant women* who would desire to have a painless delivery. Moreover, the Italian Parliament is about to establish a new law which will make it obligatory for all Italian hospitals to open similar obstetrical conditioning centers. Money, in the amount of five million *liras*, is being provided by the FIAT automobile company for the initial expenses of these centers.

All new problems and innovations sooner or later provoke controversies. Painless labor is following the same old trend. Today, there seem to be two groups of physicians: 1) the psychological obstetricians who promote pain-free delivery ("*schmerzfreie Geburt*"), and 2) the obstetrical psychologists who talk of fearless delivery ("*angstfreie Geburt*"). The German, Hubert Lohmer, believes that the delivery of a child should not be considered either a case of psychotherapy or an act of surgery. The birth of a child is a natural, physiological process, and the mother should approach it without anxiety. But how could we nowadays expect such an attitude on the part of the mother, in *our Age of Anxiety*? There is anxiety everywhere:—anxiety of war and unemployment, of sickness, of loneliness and aloneness, and anxiety of the Unknown. Anxiety causes cramp and cramp causes pain. Pain can be prevented by psychological conditioning or by narcotics (anesthetics). The use of anesthetics, or the truly pain-free delivery, seems however to take away the mother's responsibility and her feeling of pride, according to the

opinion of psychoanalysts. The mother might feel that labor is but a surgical operation during which *a tumor, the child*, is removed from her body under pain-free anesthesia. A mother who had been trained for her labor by proper relaxation and gymnastics will actively participate in the delivery of her child, thus saving the very precious *psycho-physical relationship of mother and child*.

Among the many hypotheses (rather speculations) which are growing about the nature and *origin of cancer* there is one which blames the frequency of the tumor upon the abundance of certain minerals in the soil. Bordeaux members of the French Academy of Medicine took *samples of French soil* but were unable to find any relationship between the regional differences in the richness of calcium and potassium and the geographical distribution of cancer.

Various observations here and abroad are bringing the numerous *skin-sensitivity tests into disrepute*. British clinicians recently showed for instance that the intradermal testing for sensitivity to horse serum is quite unreliable. A positive local reaction often develops from injection of tap-water or saline. It is recommended that, instead of relying on skin tests, one should rather watch the general reaction (malaise, headache, flushing) of a person after the subcutaneous injection of a small dose of the questionable material. Such reaction comes quickly in about 20 minutes. If a person is *sensitive to horse serum*, any attempt at desensitization would be useless. There is a grave doubt whether such a desensitization is possible at all.

Old names gradually lose their meaning in our modern world. Recently, the *Royal Sanitary Institute*, which was established in 1876, at the peak of the Victorian Era, decided to change its name to the *Royal Society for the Promotion of Health*. It was felt that the word "Sanitary" has now an entirely different meaning than 80 years ago. Together with its name, the institution also modernized its museum. (N.B. This is a still

better procedure than the one that would scrape the institution entirely for its being "mid-Victorian".)

The British Army Council has a *Battle Nomenclature Committee*. It just published a report in which almost 1,000 battles of World War Two have been given distinctive names (which will be also adopted by the medical histories of the war, no doubt). The report represents at least ten years' work, and an almost complete review of the history of the Second World War. The British Committee avoided using names of places which figured prominently in World War One. If the place was the site of several battles, distinction among them is made by numbers, or by years, as Cassino I, Cassino II, Tobruk 1941, etc. Some battles again have been named for the fanciful descriptions given to obscure places by troops, as The Kennels in North Africa, and the "Impossible Bridge" in Italy. Naming of battles is probably the first step in the awarding of battle honors to the units which took part in them.

*Lebanon* has a total population of 1,300,000. One tenth of the people are living in zones considered malarious. *Malaria is endemic* in the coastal plains, along river courses and in the northern portion of the Bekaa, the valley separating the Lebanon Mountains from the Anti-Lebanon range. Vectors of the disease are *Anopheles sacharovi*, *A.superpictus*, and *A.claviger*. During the early years of the present decade, demonstrations of malaria control were held by the personnel of the World Health Organization.

In recent years, *Lebanon underwent many changes*, and the character of *medical practice* greatly improved. Formerly, the village doctor was everything for his patients, from father confessor to justice of peace. He was highly respected by his patients who called him "effendi." Until about the last third of the 19th century the country was spared from the *scourge of tuberculosis*. Now, the disease has gone on a rampage. Tuberculosis was imported into Lebanon, and treatment in special sanatoria began in 1908. There are

four tuberculosis sanatoria, with 1100 beds. During the last 42 years, the sanatoria treated 23,000 patients, half of them native Lebanese.

Lebanon has *two medical faculties* for the education of physicians, and graduate doctors are inevitably replacing the many empiricists and quacks who have been practicing the healing art in the country. The American Medical Faculty was founded in 1868, and the French Medical Faculty was established in 1883. Both are in *Beyruth*, the city which became the *medical center for the entire near Middle East*.

The Kingdom of *Jordan* will be the recipient of a new *ophthalmic* hospital and research institution by the generosity of the Venerable Order of the Hospital of St. John of Jerusalem. This order fights trachoma which is the most serious in the Middle East, especially among the Arabs, causing much blindness and visual disability. The funds for building the new medical establishments were also partly provided by the Jordan Government, and the rulers of *Kuwait* and *Bahrein*, and by some oil companies.

*Kuwait* became a very prosperous little country now among the Persian Gulf states. It has several hospitals, and its general medical services are under the guidance of a Ministry of Health. The doctors of this Arab country established a society, the *Persian Gulf Medical Society* a few years ago, and they contribute valuable observations on the medical problems of the tropics.

"*New Guinea mouth*," a relation of tropical ulcer, is the name of the form gangrenous stomatitis (gingivitis) that begins as Vincent's infection of the lower jaw and spreads suddenly, owing to ill feeding, respiratory infections, cold, hardships, etc. Penicillin and lemon-chewing (half a lemon twice a day), together with good feeding, are the best available therapy.

Experiences of a medical officer with the *Royal Marine Commandos in Malaya* were told by a surgeon of the Royal Navy at a section meeting of the last Australasian Medical Congress. On arrival at Penang the troops

spent two weeks in getting jungle-green clothing, special type of jungle pattern boot, lightweight webbing equipment and a *machete*. The Commandos broke up into 4 self-contained troops, each taking a base camp near a large village, from where patrols were sent out after the bandits.

Each camp had a cookhouse, also a canteen. Drinking water was obtained from a well, and drawn through a combined filtration and chlorination plant. Latrines and urinals were of the deep-bore pattern. Each camp had a small runway to take an Auster aircraft. The *medical personnel of the camp* included 6 sick-berth naval ratings, and 8 Royal Army Medical Corps orderlies. The medical officer maintained a main sick bay at Commando headquarters, and 3 subsidiary sick bays in the other base camps. The nearby village had also a Malayan Government dresser who was usually in charge of the apothecary shop of the village. The Commando maintained excellent liaison with these civilian facilities. All sick bays and first-aid posts were well stocked with dry plasma and antibiotics.

The medical emphasis was put upon *preventive medicine*. Malaria prevention, for instance, consisted in the following routine. Each man took a paludrine tablet daily under the supervision of his superior officer. Long sleeves were worn after sunset and dimethyl phthalate (a repellent) was liberally rubbed on the exposed parts of the skin. At night, mosquito nets were put on in the living quarters under the watchful eye of the duty officer.

In *jungle patrols*, a head veil soaked in the mosquito repellent, was used to cover also the neck. *Prevention of scrub typhus* was achieved by impregnation of the underwear three times a week with dibutyl phthalate. The end of a burning cigarette was a good means to get rid of leeches from any part of the body. Skin diseases, especially ringworm, were controlled by letting the man get a *good suntan*. Body and foot powder was also generously used. After a patrol in the jungle a man became pale, and his skin the

ideal ground for tropical mycoses. At patrols, every man carried his own first-aid field dressing. The patrol was also accompanied by a medical orderly with his first-aid equipment. The wounded were evacuated to the military hospital at Taiping. This particular Commando stayed rather healthy; there was but one case of malaria in 6 months, and venereal diseases were also at a minimal rate.

A comparative study (made by Portuguese military surgeons) shows that the *American sailor in the U. S. Navy has the highest protein* (207 g) and fat (177 g) ration a day. The carbohydrate supply is the largest (850 g) in the Russian Navy. The Russian sailor's diet is also the richest in calories (4846 cal.; U. S. gives 4464 cal.)

How to tell the sex of a child before birth had been a favorite problem of laymen and physicians alike. Several years ago, someone

suggested that the offspring is of the male sex if upon gentle rubbing the nipple of the pregnant woman (3-10. month) many of the erectile "glands" of the areola would become markedly visible. The originator (Barjaktanovic) claimed correct results in 96.6% of the tested cases. A later reinvestigator has not fully discredited this claim.

To the observer around the world it seems that there are many, many studies and reports in the field of medicine which stand alone, in complete isolation. Nobody is there now to correlate the individual facts into a general overall system. Even if someone would take this trouble, however, the isolated observers and clinicians would continue to stay in isolation. In lack of adequate and prompt communications, the lone man would also hardly pay any attention to the coordinative efforts of others . . . *Multa paucis!*



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It is a privilege to list the firms who have joined The Association of Military Surgeons as Sustaining Members. We gratefully acknowledge their support.

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## ASSOCIATION NOTES

Timely items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

### Department of Defense

*Ass't Secretary (Health & Medical)*—HON.

FRANK B. BERRY, M.D.

*Deputy Ass't sec'y*—HON. EDW. H. CUSHING, M.D.

#### SELECTIVE SERVICE

The Department of Defense has requested the Selective Service System to provide 14,000 men for the Army during September. The Navy, Air Force, and Marine Corps do not intend to place any calls for men with Selective Service during September.

#### OSTEOPATHS AUTHORIZED COMMISSIONS

The medical services of the Armed Forces are now authorized to commission osteopaths as medical officers. The President on July 24 signed the bill authorizing such action.

#### MEDICAL-DENTAL SYMPOSIUM

A Combined Armed Forces Medical-Dental Military Symposium for all Armed Forces of the United States, active and reserve, will be held at the U. S. Naval Hospital, Great Lakes, Ill., September 26, 27, and 28.

The theme of the meeting will be *Medical and Dental Aspects of Total War*. Retirement point credits will be granted. For further information contact: The Commandant Ninth Naval District, Att'n. Code 46s, Building 1, Great Lakes, Ill.

#### NATIONAL LIBRARY OF MEDICINE

What is now known as the Armed Forces

Medical Library will pass to the control of the Department of Health, Education, and Welfare. This Library started out in 1836 as the Surgeon General's Library (Army), later was known as the Army Medical Library, and recently as the Armed Forces Medical Library.

The Department of Defense in the past several years has not felt the need for the Library as part of the Armed Forces. However the importance of the Library as a part of the government has been fully recognized. All those connected with the Library from its inception to the present day when it now passes over to another government department have the everlasting gratitude of the medical profession of the world. They have contributed much effort in making the National Library of Medicine not one of the greatest in the world but the greatest.

Under the new management there will be a board of regents that will decide the future site and policies of the National Library of Medicine.

Now let Congress make funds available promptly in the coming session so an adequate building can be provided for this important heritage from the military services.

#### MEDICAL LIBRARY CATALOG

The 1955 *Armed Forces Medical Library Catalog* is now available for purchase from the Card Division, Library of Congress, Washington 25, D. C., at the price of \$17.50.

This volume contains a complete Author and Subject section; the Author Section contains approximately 50,000 entries; the Subject Section, 30,000.

This is the first annual volume to include records of the History of Medicine Division's cataloging. There are 986 pages in the book.

## Army

*Surgeon General*—MAJ. GEN. SILAS B. HAYS

*Deputy Surg. Gen.*—MAJ. GEN. JAMES P. COONEY

### SURGEON GENERAL HONORED

Major General Silas B. Hays, The Surgeon General, U. S. Army was elected to honorary fellowship in the American College of Chest Physicians at its annual meeting in Chicago in June.

### BOARD DIPLOMATES

At the end of June there were 741 officers of the Army Medical Service who were board diplomats in approximately 40 different specialties.

Of any one field to be considered in medicine, internal medicine showed the highest percentage (17%) with surgery second (15%); the remaining 67% was distributed among 23 specialties. There were 681 Medical Corps officers who were diplomats.

In the field of dentistry there were 43 officers who were board diplomats. Prosthodontia accounted for almost half of this number with oral surgery as a second choice.

The Medical Service Corps had nine American board diplomats, clinical chemistry and clinical psychology being equally favored.

The Veterinary Corps had eight diplomats, equally divided between veterinary public health and veterinary pathology.

The graduate professional training afforded by the Army has opened the way for officers of the Medical Service to prepare themselves for the rigid examinations leading to the board diplomate status.

### SGO ASSIGNMENTS

Col. Clarence V. Frey, MSC, has been appointed Chief, Pharmacy, Supply, and Administration Section, Medical Service Corps. He will serve in a dual capacity, acting also as Chief of the Medical Service Corps and Warrant Officer Assignment Sec-

tion in the personnel division of the Surgeon General's Office.

Col. Robert L. Hullinghorst, MC, has been appointed Chief of the Research and Development Division in the Office of the Surgeon General. He replaced Col. Richard P. Mason, MC, who has been transferred to the Walter Reed Army Medical Center. Colonel Hullinghorst has been deputy director of the Walter Reed Army Institute of Research for the past two years.

Lt. Col. Karl Ehrlich, DC, has assumed duties as Chief, Dental Professional Branch, Dental Division, Surgeon General's Office.

Lt. Col. Robert I. Jetland, MSC, has been appointed administrative assistant to Colonel Bernard Aabel, Chief of the Medical Service Corps. Colonel Jetland is a native of Minnesota, holds a B.S. degree from the University of Minnesota and is a graduate of the Navy School of Hospital Administration, and the Army Medical Service School.

Lt. Col. Gerald M. McDonnel, MC, has been assigned as assistant to Colonel Clinton S. Maupin, MC, Special Assistant to the Surgeon General for Nuclear Energy. Col. McDonnel has had a broad experience in the field of radiology and the medical aspects of atomic energy.

Maj. Emilie K. Jensen, ANC, has been named special assistant to Col. Inez Haynes, Chief of the Army Nurse Corps.

### HONORED

Lt. Col. Agnes P. Snyder, Chief of the Physical Therapist Section, Army Medical Specialist Corps, has been elected Speaker of the House of Delegates of the American Physical Therapy Association for a two-year term.

As presiding officer of the legislative body of that association Colonel Snyder will wield the gavel once a year at the annual sessions of the House of Delegates. She also becomes a member of the board of directors, automatically, upon being chosen as Speaker of the House of Delegates.

Colonel Snyder is a native of West Virginia. She holds a master's degree in Physi-

cal Therapy from the Medical College of Virginia. She has served in the Army since 1933.

#### WRAH NEWS ITEMS

Colonel Milton S. Thompson, MC, has become Chief of the Orthopedic Service at the Walter Reed Army Hospital. His previous assignment was in Germany where he filled a similar position at the U. S. Army Hospital in Neubrucke, and was consultant in orthopedics for the Surgeon, U. S. Army Forces, Europe.

Colonel Robert Higdon, MC, has been appointed as Chief of the Dermatology Service at the Walter Reed Army Hospital. He was formerly assigned to the Tokyo Army Hospital and was consultant to the Surgeon, U. S. Army Forces, Far East.

Colonel Henry S. Murphey, MC, has assumed the position as Chief, Otolaryngology Service, Walter Reed Army Hospital. He has just recently returned from the General Gorgas Hospital in the Canal Zone.

Lt. Col. Herman Jones, MSC, has been appointed Inspector General of the Walter Reed Army Medical Center. Colonel Jones has just recently completed the course in Business Administration at Harvard University.

Lt. Col. Manley G. Morrison has been appointed Comptroller at the Walter Reed Army Medical Center. He has just completed the Command and General Staff College course at Fort Leavenworth, Kansas.

Captain Edward M. Strobel is the new Public Information Officer at The Walter Reed Army Medical Center. He recently completed the nine-month advanced branch course at the Army Medical Service School, Fort Sam Houston, Texas.

#### DIRECTOR WRAIR

Col. Richard P. Mason, MC, has replaced Brig. General John R. Wood as Director of the Walter Reed Army Institute of Research at the Walter Reed Army Medical Center, Washington, D.C. General Wood has retired and has taken a position as vice-president for research with the Burroughs, Well-

come Co., Inc. (U.S.A.), Tuckahoe, New York.

Col. Mason has been Chief of the Research and Development Division in the Office of the Surgeon General of the Army. A native of Kansas, he received his medical degree from Washington University in 1936. He entered the Regular Army in 1937 and has been engaged in laboratory and research work during his career.

#### PREVENTIVE MEDICINE GRADUATES

Eleven Army physicians received diplomas upon completion of their eleven-month course in Military Preventive Medicine given at the Walter Reed Army Medical Center. Diplomas were presented by Brig. General John R. Wood, Commandant of the Walter Reed Army Institute of Research, to: Colonels Oscar B. Griggs, Dean Schamber, Clark B. Williams; Lt. Colonels Italo W. Daniele, Howard G. Krieger, Isidor Markowitz, Nick Perlmutter, Alfred G. Siege; Majors William A. Bridenstine, Henry J. Donnelly, and William E. Froemming.

Col. Charles H. Moseley, Director of the course, introduced the guest speaker, Dr. Ira V. Hiscock, Dean of the School of Public Health, Yale University, who spoke on the topic, "Gaps in Our Battle Line" (to be published in **MILITARY MEDICINE**).

#### MASS CASUALTIES WORKSHOP

Army nurses will hold the first post graduate workshop on nursing procedures required in case of mass casualties September 10-21 at the Walter Reed Army Institute of Research, Walter Reed Army Medical Center.

Participants in the workshop will come from all parts of the United States. Major Harriet Werley, ANC, nursing consultant, Department of Atomic Casualties Studies of the Institute, will be director of the workshop.

Colonel Inez Haynes, Chief of the Army Nurse Corps, has said, "The workshop has been constructed to provide guidance to Army Nurse Corps officers in meeting their dual responsibilities in the event of widespread

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medical needs in the community following the infliction of mass casualties."

#### SPECIAL LECTURES

Special dental lectures are being held at the Walter Reed Army Medical Center in Washington during September. The lectures will be held in Room 276, Division of Dentistry, Walter Reed Army Institute of Research, except those marked below with an asterisk. Those so marked (\*) will be held at the Central Dental Laboratory at the Center.

Monday, September 10, 2:00 P.M. Dr. Victor L. Steffel,\* Professor of Prosthodontics and Chairman, Partial Denture Division, School of Dentistry, Ohio State University: "General Treatment Planning, Surveying and Designing for Removable Partial Dentures"; "New Ideas in External Direct Retainers"; "The Relining of Class I Mandibular Partial Dentures."

Tuesday, September 11, 8:00 A.M. Dr. Thurlow W. Brand: "Anatomy of the Head and Neck."

Wednesday, September 12, 8:00 A.M. Dr. Thurlow W. Brand: "Anatomy of the Head and Neck."

Wednesday, September 12, 1:00 P.M. Major General Oscar P. Snyder, DC, Chief, Army Dental Corps: "Leadership."

Thursday, September 13, 2:00 P.M. Dr. Luzerne G. Jordan: "Debasing Partial Dentures."

Tuesday, September 18, 8:00 A.M. Dr. Harold W. Krogh, Member, Attending Staff, Dental Service, Walter Reed Army Hospital: "Radiology in Exodontia."

Thursday, September 20, 2:00 P.M. Dr. Luzerne G. Jordan: "Relining Procedures."

Monday, September 24, 8:00 A.M. Dr. Sanford M. Moose, Special Consultant, Office of The Surgeon General: "Treatment of Infections of the Head and Neck"; "Conservative Treatment of Disturbances of the Temporomandibular Joint"; "Special Problems in Dealing With Fractures of the Condyle"; "Construction of Plaster Headcap and Emergency Fracture Appliances."

Monday, September 24, 1:00 P.M. Dr.

Harry H. Shapiro, Assistant Professor of Anatomy, College of Physicians and Surgeons, Columbia University: "Roentgen Anatomy of the Skull"; "The Muscles of Mastication."

Wednesday, September 26, 1:00 P.M. Colonel Leland G. Meder, DC, Assistant Chief of the Dental Division, Office of The Surgeon General: "Dental Corps Plans and Policies."

A cordial invitation is extended to all interested persons to attend any, or all, of these special lectures.

#### BAMC NEWS

Women's Army Corps enlisted personnel are taking field medical training at the Brooke Army Medical Center, Fort Sam Houston, Texas. This is the first time that this has been done.

They receive their basic training at Fort McClellan, Ala., and those who are chosen for the medical training are sent to Fort Sam Houston for the field training to be followed by training at the Army Medical School in subjects pertaining to the medical service of the Army.

#### FOOD SERVICE BAMC

"Centralized Ward Tray Service" is the concentration of tray service for patients in one kitchen of a hospital rather than the scattering of such service through the hospital ward kitchens.

This all started some years ago at Valley Forge Army Hospital under the name "Air Flight Service." The name comes from the method used by airlines.

One of the very important requirements in the food service is to deliver to the patients foods hot *that should be hot* and cold *that should be cold*. Nothing engenders more dissatisfaction than cold coffee and milky ice cream.

At Brooke Army Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas, Major Katharine Manchester, Chief of the Food Service, has further worked out the development of "Air Flight Service," which she started at Valley Forge.

It is an assembly line process in one kitchen to get the individual trays readied from directions on previously prepared tray tags. The electric food carts which maintain the proper temperature are wheeled to the wards where they are again connected with the electric line. Thus the desired temperature is maintained throughout the serving hour.

Here is what Major Manchester says, "We save actual floor space. Eliminated were seven diet kitchens and we did not extend our central kitchen. We save in food. Now that patients order their meals and the size of their portions, we have cut food waste as much as 40%.

"The ward dietitian now has time to do the job she is supposed to do. She talks with patients, finds out their likes and dislikes, plans their menus to suit them. Patients eat better even on a limited diet, they get what they like and can have more variety.

"The new system means that each tray is checked twice as it is served. There are fewer errors in the final service and the patient receives the proper diet.

"All that adds up to a worthwhile project. It helps Food Service serve the patients better and more economically."

#### TOKYO HOSPITAL

The Tokyo General Hospital, Japan, has been turned back to the St. Luke's International Medical Center. Formerly known as the 49th General Hospital of the Army and situated in the heart of Tokyo, this hospital has provided medical service not only of a general but also of very specialized categories to the military forces of the Far East and to their dependents. During the Korean Conflict the Tokyo General Hospital was an important link in the chain of evacuation of the casualties.

#### DENTAL CLINIC

Fort Dix, New Jersey, was the scene of a ground-breaking ceremony for a new Army Dental Clinic, the first of its type to be erected in the eastern part of the country.

Maj. General Oscar P. Snyder, Chief of the Army Dental Corps, and Col. William T. Williams, Dental Surgeon for the First Army, attended the event held on August 8. The building should be ready by May 1957.

#### HOSPITAL CENTER TRAINS

The 31st Hospital Center, Philadelphia, commanded by Brig. General Harold G. Scheie, professor of ophthalmology at the Graduate School of Medicine, University of Pennsylvania, was in training at Fort George G. Meade, Maryland, the latter part of July.

#### PRESIDENT AMERICAN UROLOGICAL ASSOCIATION

Colonel William J. Baker, U. S. Army, Reserve, Retired, of Chicago, Illinois, was elected President of the American Urological Association in Boston at its recent meeting there. He will preside at the New Orleans, La., meeting in 1958.

Dr. Baker is associated with Doctors Edwin C. Graf and Daniel H. Callahan, with offices at 7 West Madison St., Chicago 2, Ill. He is Professor of Urology at the Illinois University School of Medicine.

Dr. Baker has been a member of our Association since 1942.

#### NEW POSITION

Col. Michael J. Blew, USAR, Retired, has joined the staff of the National Society of Professional Engineers, Washington, D.C., as field representative.

Before his retirement from active duty in the military service in 1947, he served as chief sanitary engineer in the Office of the Surgeon, Fourth Service Command, Atlanta, Ga. Col. Blew is the author of "Sanitary Bacteriology" and the co-author of "Sanitary Chemistry."

#### NEW PUBLICATION

*The Medical Department: Hospitalization and Evacuation, Zone of Interior* has just been published as a part of the military history of World War II by the Department of the Army. The book was written by

Clarence McK. Smith, formerly a member of the Historical Division, Office of the Army Surgeon General.

This book sets forth the administrative developments in caring for and transporting patients in this country and overseas. The many problems in the expansion of the Medical Department from a peace time basis to a wartime basis involved supplies, personnel, construction, and planning.

Copies of the book may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. for \$4.00.

## Navy

*Surgeon General*—REAR ADM. BARTHOLOMEW W. HOGAN  
*Deputy Surgeon General*—REAR ADMIRAL BRUCE E. BRADLEY

ADMIRAL PUGH RETIRES



*U. S. Navy Photo*

On his retirement from the Navy on August 1 Rear Admiral Lamont Pugh,

former Surgeon General, had this to say:

From the spring of 1917 to the summer of 1956 is in terms of time a "right smart" while. An individual whose career has spanned that period of about 40 years will have witnessed an exceedingly eventful and interesting segment of civilization's pageant. For me the period in point has comprised almost two years in the Marine Corps, four years in medical school, and a little over thirty-three years in the Medical Corps of the Navy. During this period I have seen the beginning, the progress and the cessation of two world wars and of three years of bitter fighting in Korea.

With particular respect to my thirty-three years in the Navy, suffice it to say that I have witnessed a tremendous measure of action and reaction—change and progress. From a modest Navy that could to a major extent be contained in the waters around Yorktown, Va., during World War I, there grew in the interim between the two world wars and incident to World War II the mightiest armada of ships and floating fire power the world has ever known. The U. S. Army has, during this same period, undergone a similar change—growth, development and progress. This era has seen the birth and the coming of age of the U. S. Air Force.

It is interesting to observe these three vigorous members of our National Defense family currently expressing their convictions as to the importance of their several missions. It is a basic philosophy of the Army, as it has been from the beginning, that foot soldiers are essential to both an adequate defense and any successful offensive undertaking. The Air Force proclaims that the delivery of powerful explosive missiles to the enemy's country carries the hope and indeed assurance of a speedy victory. The Navy clings to the basic premise that the maintenance of mastery of the sea, open sea lanes, and an ability of this Nation thereby to convey supplies to its allies is essential to victory.

For me, as a member of the profession of medicine, it has been interesting to contem-

plate the incontrovertible fact that the medical departments of the Armed Services have not only kept abreast of all the evolution and progress that has gone on in their respective branches, but have in a distinctly significant way determined how far and how fast much of the progress that has been made could be made. That the measure of all things in man is as valid today as it was when Protagoras made the cogent observation 400 years B.C. It has devolved and will continue to devolve upon the profession of medicine to determine what that measure was or is and how far and how fast it could or can be increased.

It is further interesting to contemplate that throughout this period of phenomenal material change certain fundamental conditions or realities have remained the same. Chief among these immutables have been birth on the one extreme, death on the other and in between, life with its melange of essentials and inimicalities. Grouped in this complex there is an innate quality which, for want of a better term, we call human nature. From what I have had occasion to observe of this attribute—this instinctive sensibility—it changes very little, if at all, and I am left with the conviction that in its basic elements human nature is virtually the same the world over. A natural conclusion is that so long as this remains true—and there is no prospect of its appreciable change—there will continue to be a need for an Army and a Navy and an Air Force if this Nation's position of dominance as a world power is to long endure.

It would be a callous, impassive, indifferent individual indeed—who, after having been privileged to witness and in some measure to participate in the pageant of which I speak for upward of four decades, could contemplate the close of his career unmoved. And so it is with a sense of intermingled thoughts, convictions, emotions, and sentiments that I come to this hour. Most of all I want to say that grateful as I am for the privilege of having belonged to the Navy and for having spent thirty-three years of

my life in its Medical Corps, my appreciation upon that score is transcended by my overwhelming gratitude towards the countless men and women—both civilian and service personnel alike—who over the years have rendered so much in terms of loyalty and support of whatever success I have achieved—whatever contribution I have made in the better interests of the Naval Service. I regret the many imperfections on the ledger I leave. I regret that the time has come for me to lay aside the uniform. I would like to string along and see what lies ahead.

If I may be permitted to leave a word of suggestion to those who will come after me it would be couched in the philosophy I believe of William James and would enjoin those who hope to keep a rendezvous with retirement to do every day or two something for no other reason than that they would rather not do it, so that when the shadows lengthen and the evening comes it may find them not unprepared to accept with equanimity the inevitable.

#### RETIRED

Capt. Jack H. Sault, DC, was placed on the retired list of officers of the U. S. Navy on August 1 after serving more than twenty years of active duty. He will be associated with a group clinical practice in Palo Alto, California.

#### DR. KARSNER TO LECTURE

Dr. Howard T. Karsner, Medical Research Advisor to the Surgeon General of the Navy, will be the first lecturer in a series to be given in honor of the famous pathologist, Dr. Carl V. Weller.

The Carl V. Weller Lectureship has been established by the Michigan Pathological Society and the first meeting will be at Ann Arbor, Michigan on December 8, 1956.

#### CHANGE IN COMMAND

Capt. Lyle A. Newton, MC, relieved Capt. Tilden I. Noe as Commanding Officer of the U. S. Naval Hospital, Guantanamo Bay, Cuba. Captain Newton is a member of the

American Board of Medical Examiners and the American Board of Neurology. He is a graduate of the University of Nebraska School of Medicine.

#### DENTAL SERVICE-USS FORRESTAL

Teeth as well as airplanes need repair on the *USS Forrestal*. Imagine a well equipped and well operating airplane piloted by a flyer with a toothache! We predict that he will make a "Bee-line" for the dental clinic as soon as he lands on the flight deck and gets that plane secured.

To meet this and other dental emergencies and also take care of ordinary maintenance of the ivory lined cavity this greatest of all combat vessels has a well equipped and well staffed dental clinic. The senior dental officer is Captain David A. Hill, who is assisted by Commander Wilton R. Gabrels, Lieutenant William J. Jasper, Lieutenant James W. Phillips, and ten very competent corpsmen.

In the United States there is one dentist for every 1,669 persons. Aboard the *Forrestal* there is one dentist for every 875. Is this a waste of personnel? Not by any sensible figuring. Here is the reason:

1. The predominating age group in the Navy is that of the late and early



FIG. 1. CAPTAIN DAVID A. HILL, DC, USN, Senior dental officer, *USS Forrestal*.



Official U. S. Navy Photo

FIG. 2. WAITING ROOM IN DENTAL AREA, *USS Forrestal*.



Official U. S. Navy Photo

FIG. 3. CAPTAIN DAVID A. HILL, DC, USN, treats a patient in one of the ship's four dental operating rooms, *USS Forrestal*.

2. The military population aboard a ship is fluctuating and highly mobile, particularly in wartime. It may increase unpredictably, and sufficient dental personnel must be maintained for any eventualities.

We have not said anything about the dental service's contribution to the nutritional state of the fighting man. Nor have we mentioned the effect on morale of a good set of teeth. We will let you name some of the other things.



Official U. S. Navy Photo

FIG. 4. A modern dental laboratory capable of caring for any dental need is part of the clinic, *USS Forrestal*.

We will say that the dental department of the *USS Forrestal* is carrying out the traditional mission of the medical department of the Navy, "TO KEEP AS MANY MEN AT AS MANY GUNS AS MANY DAYS AS POSSIBLE."

#### SCHOLARSHIP AVAILABLE

Former Navy Hospital Corpsmen will be eligible to a medical scholarship at the University of Southern California under rules laid down in the Robert E. and May R. Wright Foundation.

To be eligible the individual must (1) have served with a rating of Hospital Corpsman Second Class or better and discharged honorably, (2) be of an age at expected date of graduation 21-33 years, (3) establish mental, moral and professional fitness, officer-like qualities and aptitude for naval service, (4) meet appropriate physical standards (5) agree to apply for a commission and pass Medical College Admission Tests.

The initial donation of \$4,000 was made by May R. Wright, widow of Lieutenant Commander Robert E. Wright, USNR, retired. Subsequent annual donations are contemplated and a bequest of \$100,000 to complete the Foundation Fund.

Interested persons may direct inquiries to the University of Southern California scholarship office.

#### CREDIT POINTS

One retirement point will be granted to Naval Reserve Dental Officers for each of the three sessions attended at the Dental Military Seminar to be held October 1-4 at Atlantic City in conjunction with the 97th Annual Session of the American Dental Association.

#### RESIDENCY TRAINING PROGRAM

The U. S. Naval Hospital at San Diego, Calif., has been approved for a two year residency training program in thoracic surgery. The U. S. Naval School of Aviation Medicine at Pensacola, Fla., has been approved for a two year residency training in Aviation Medicine.

## Air Force

*Surgeon General*—MAJ. GEN. DAN C. OGLE  
*Deputy Surg. Gen.*—MAJ. GEN. W. H. POWELL, JR.

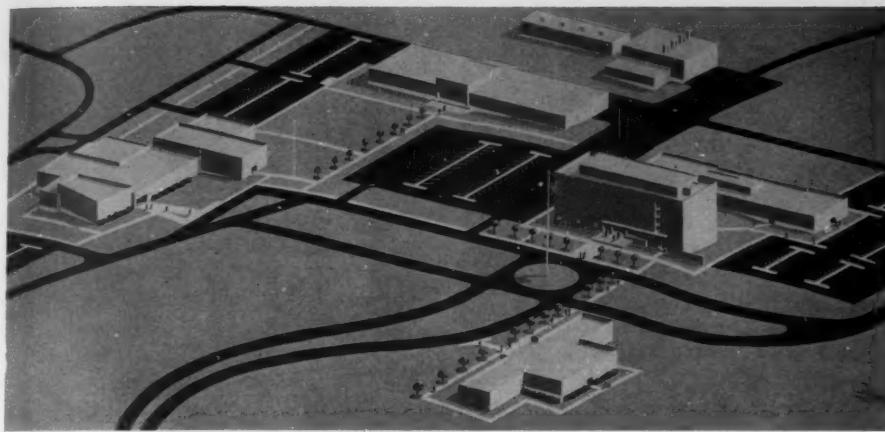
#### SCHOOL OF AVIATION MEDICINE

As man flies higher and higher into space the problems of his existence in these higher altitudes increase. Cosmic rays, temperature, oxygen supply, pressure and many other problems confront the altitude seekers.

In this ever increasingly quest for knowledge and answers to many of those problems of space medicine the U. S. Air Force is vitally concerned. The answers for the individuals come through medical channels. These answers are the result of intensive research which must not be spasmodic but continuous and follow every lead that arises in the work. Work of this kind requires specialized personnel and special equipment in the most modern buildings and under the best working conditions.

The need for this specialized center has been apparent for some years. Now that need is to be met by the construction of a new School for Aviation Medicine at Brooks Air Force Base, San Antonio, Texas.

The following picture is the artist's con-



U. S. Air Force

ception of this \$8,800,000 center which will house the school. There are to be five major buildings of modern functional design. The Research Institute (right) with its four stories and basement, will house the School's administrative headquarters and library, in addition to much of its research effort. The School Building (left) will be a one-story building which will have class rooms and an auditorium, and a two-story Aviation Medicine Examining Wing. The long, low building in the center will be the Altitude Laboratory. Behind it are cooling and heating plants. In the foreground (right center) is the Flight Medicine Laboratory, a one story building. The shops are located back of the Research Institute.

There will be plenty of room for expansion for housing, food and recreational facilities which, while part of the original plan, had to be eliminated at this time.

#### RECEIVES PH.D.

Capt. John R. Prigmore, stationed at the School of Aviation Medicine, Randolph Air Force Base, Texas, received his Ph.D. in biochemistry from the University of Wisconsin recently. He was awarded the B.S. degree in 1948 by the University of Chattanooga, and a year later the M.S. degree from Emory University, Atlanta, Ga.

Dr. Prigmore's thesis was on dietary interrelationships and imbalance in nutrition. He is now engaged in a long-range study of the physiological stresses among flying personnel.

#### NEW HOSPITAL

Kindley Air Force Base in Bermuda has a new 50-bed hospital which was dedicated on June 21. This is a two-story concrete structure incorporating many of the newest developments in hospital planning.

Attending the dedication ceremony were Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical); Lieutenant General Sir John Woodall, Governor of Bermuda; Major General William H. Powell, Deputy Surgeon General of the Air Force; Rear Admiral B. E. Bradley, Deputy Surgeon General of the Navy; Dr. Wilbert C. Davison, Dean of the Duke University Medical School; Colonel George W. Peterson, Commander of Kindley Air Force Base; and Major Ignatius Stein, Commanding Officer of the new hospital.

## Public Health Service

*Surgeon General*—LEROY E. BURNEY, M.D.  
*Deputy Surg. Gen.*—W. PALMER DEERING,  
 M.D.

## HOSPITAL SERVICE AND ADMINISTRATION

Nine grants, totaling \$367,182, have been approved to conduct research and demonstrations in the field of hospital service and administration.

The University of North Carolina School of Medicine, Chapel Hill, will study the referral of patients from rural areas to the outpatient clinic of the university hospital, reasons for the referrals, and value to the referring physicians of the clinic's report about patients.

The University of Tennessee College of Medicine, Memphis, is to demonstrate how a coordinated hospital plan for the entire State can be developed.

The University of Michigan, Ann Arbor is to study how the organization, staffing, and procedures in 20 Michigan hospitals are related to the type of care the patients need and receive; and also to study the relationship of administrative and supervisory practices in hospitals, motivations and job satisfaction of the employees, and effectiveness of job performance and organization.

St. Louis University, St. Louis, Mo., is to develop a program of graduate study in hospital administration.

Columbia University School of Public Health and Administrative Medicine, New York, is to study the influence of different patterns of organizational and community relationships and of new hospital construction on the quality of medical, hospital, and related health service.

The Council of Jewish Federations and Welfare Funds, New York City, is to study recent efforts in various communities to coordinate the facilities of the general hospital with resources of other medical and related community services.

The Minnesota Department of Health, Minneapolis, is to demonstrate how the quality of service given patients in hospitals of the State, especially in rural areas, can be improved through the development of methods for in-service training.

The American College of Physicians, Philadelphia, is to establish minimum stand-

ards of quality and efficiency for evaluating the practice of internal medicine in hospitals.

## CONSTRUCTION AID

Research has been aided by the Health Research Facilities Act of 1956 which makes available \$30 million to the Public Health Service for grants to public and non-profit institutions for research.

The Federal share of any project would be not more than 50% and would be limited to construction, equipping, and remodeling of existing buildings.

Application forms, as well as additional information, will be supplied promptly upon request to the Division of Research Grants, National Institutes of Health, Public Health Service, Bethesda 14, Maryland.

## Veterans Administration

*Chief Medical Director*—WILLIAM S. MIDDLETON, M.D.

*Deputy Chief Med. Dir.*—R. A. WOLFORD, M.D.

## VETERAN POPULATION

The veteran population in civil life at the end of June was estimated at 22,381,000. The average daily patient load of veterans in hospitals was 112,671 (in VA hospitals 109,431; non VA hospitals 3,240). The visitors for outpatient medical care for the month of May were 182,204.

## ASSIGNMENTS

Dr. George M. Leiby, who has been director of professional services at the Veterans Administration hospital in New York City has been appointed manager of the VA research hospital in Chicago.

Dr. Michael L. Matte, who was manager of the VA research hospital in Chicago, has been reassigned to the VA hospital in Los Angeles.

Dr. Marjorie P. Wilson has been appointed chief of the residency and internship division, Department of Medicine and Sur-

gery at the Veterans Administration Office in Washington.

Dr. Jackson H. Friedlander, who has been in the central office of the Veterans Administration in Washington has been reassigned as manager of the VA hospital in Big Springs, Texas.

Joseph H. Van Schoick, who has been special assistant to the Director of Physical Medicine and Rehabilitation at the Central Office, Veterans Administration, has been appointed as Chief of the Corrective Therapy at that office. He succeeds Dr. John E. Davis who has retired.

#### MEDICAL ADVISORY GROUP

Dr. Robert M. Zollinger, professor and chairman of the Department of Surgery at Ohio State University, has been appointed chairman of the Veterans Administration Special Medical Advisory Group. He succeeds Dr. Wendel G. Scott of Washington University. Dr. Scott will continue as a member of the Group.

Dr. George E. Armstrong, former Surgeon General of the Army and now Director and Vice-chancellor of New York University-Bellevue Medical Center in New York City, was elected as vice-chairman of the Group to succeed Dr. Zollinger.

#### HONORED

Dr. Louis B. Newman, chief of physical medicine and rehabilitation at the Chicago northside Veterans Administration Research Hospital, has been awarded "The John E. Davis Plaque." The award was presented by the Association for Physical and Mental Rehabilitation for "distinguished leadership and outstanding service." Dr. Davis, founder of the award, was chief of corrective therapy in the Veterans Administration's Central Office in Washington, D.C.

#### MENTAL PATIENT CARE

The Veterans Administration has launched the first extensive evaluation of mental patient care in an effort to learn which treatments now used best promote the improve-

ment or recovery of mentally disturbed patients.

The project director is Dr. Richard L. Jenkins, Mt. Alto Veterans Administration Hospital, Washington, D.C. The study will take four or five years and will be aimed at:

1. Determining the relative effectiveness of different treatment techniques, such as drugs, electroshock, group psychotherapy, individual psychotherapy, and various activity therapies now in use in VA hospitals;
2. Determining the relative effectiveness of different hospital designs, staffing patterns, and program emphasis in the treatment of psychiatric patients;
3. Permitting valid estimates of the relative costs of the various elements in effective treatment programs.

#### WW II GI BILL RUNS OUT

The 12-year World War II GI Bill ceased to give benefits on July 25 except for a few veterans. Those who enlisted in 1945 and 1946 under the Voluntary Recruitment Act, as well as the disabled veterans who have been unable to finish training because of certain hardship conditions will be eligible to go on with their training.

Of the more than 7,800,000 veterans who received training 2,200,000 attended college; 3,500,000 went to schools below the college level; 1,400,000 took on-the-job training, and 700,000 enrolled in institutional on-farm training.

Although the GI Bill training program has cost \$14.5 billion the investment has been made in America where dividends will be collected in years to come. This has been a well-worthwhile program for our own people, and afforded opportunities to many who would never have had the doors opened for such educational benefits.

Continuing along the same line is the Korean GI Bill which is now in its fourth year. Benefits under this bill terminated on January 31, 1955. The Veterans Administration expects nearly three-quarters of a million Korea veterans to be enrolled in schools and training establishments under that law.

## SURVIVOR BENEFITS LAW

The President has signed the Survivor Benefits Act revising benefits for the dependents of deceased servicemen and veterans who died of service-connected causes.

Veterans Administration stated that it has taken steps to put this new law into operation even though payments cannot begin prior to January 1, 1957, the effective date of the Act.

It was stressed that this law does *not* change death pension benefits to widows and children of veterans whose deaths were not as a result of service.

Widows, dependent parents and guardians of orphan children receiving compensation for the service-connected death of a veteran are requested NOT to contact VA for information.

Veterans Administration will notify each person receiving death compensation under present law concerning his rights under the new law.

The new law is designed to:

1. Revise the death compensation program by providing monthly payments to widows partially related to military pay; slightly increase existing uniform payments for orphan children; and to provide a sliding scale of benefits for dependent parents subject to certain annual income limitations.

2. Extend Social Security coverage to those in the armed forces on a contributory basis; and

3. Revise the six months death gratuity to range from a minimum of \$800 to a maximum of \$3,000. This will be administered by the various service departments.

The new law also eliminates coverage of service personnel under the Servicemen's Indemnity Act (the so-called "\$10,000 free insurance") and coverage of reserve personnel under the Federal Employees Compensation Act on and after January 1, 1957.

The new law continues the right of veterans disabled in service to apply to VA for the five-year policy or any of the six permanent plans of National Service Life Insurance (NSLI) within one year from the date

VA finds their disabilities to be service-connected.

However, the special five-year nonconvertible NSLI term policies, for which those now in service have to apply within 120 days after their discharge will be discontinued under the new law on and after January 1, 1957. Policies now in force or issued before January 1, 1957 will not be affected.

The new form of compensation for widows, orphan children and dependent parents of those who died as a result of service will be called dependency and indemnity compensation. It will be paid by the Veterans Administration.

Persons eligible for death compensation under present law are protected in their existing rights and will be able to elect the new form of compensation if it is to their advantage.

The Veterans Administration will send election forms outlining the new benefits to help them to reach a decision. For this reason, VA asked that no inquiries be made either by letters or at its offices until after the forms are received. The forms are being mailed to widows, guardians of children and dependent parents.

New rates of dependency and indemnity compensation will be paid only if the person who elects the new benefit surrenders servicemen's indemnity payments. National Service Life Insurance and U. S. Government Life Insurance payments do not affect the right to elect benefits under the new law.

Payments to widows under the new law are made at the monthly rate of \$112 plus 12 percent of the current basic military pay of the rank held by the veteran at the time he died or was separated from service. This combination ranges upwards from a minimum of \$122 monthly.

Dependency and indemnity compensation payments are made in addition to Social Security payments to widows and children. Generally, no additional compensation payments to widows are provided for children.

Where there is no eligible widow, children under 18 years of age are eligible to receive

this new form of compensation at the following monthly rates: One child, \$70; two children, \$100; three children, \$130; and each additional child, \$25 each.

Children over 18 years of age may be eligible to receive the new compensation if they are attending school or are helpless.

Dependency and indemnity compensation for parents is paid at a sliding scale of rates related to annual income. A single parent may receive rates ranging from \$15 to \$75 monthly if his income does not exceed \$1,750 per year.

Rates for two parents living together and for parents who have remarried are similarly related to income limitations. In computing income under this law, however, certain VA benefits which are excluded under present law, must be counted.

## Miscellaneous

### FHIA ASSOCIATION MEETING

A breakfast meeting of the Federal Hospital Institute Alumni Association will be held at 8:00 A.M., September 18 at the Palmer House, Chicago (Private Dining Room No. 17). Tickets are \$3.25. The guest speaker will be Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical).

### MEETING

The 21st Annual Meeting of the Mississippi Valley Medical Society will be held at the Hotel Morrison, Chicago, Sept. 26, 27, 28. In conjunction with this meeting there will be a meeting of the American Medical Writers' Association on Sept. 28 and 29. Further details of both meetings may be obtained from Harold Swanberg, M.D., Secretary, 209-224 W.C.U. Bldg., Quinéy, Ill.

### MEETING

The American Rhinological Society will hold its annual meeting in Chicago, October 9-13. The profession is welcome to attend the scientific sessions as guests of a member

of the Society. Further information may be had by writing to Mrs. Mabel Campbell, corresponding secretary, 834 Wellington Ave., Chicago 14, Ill.

### MEETING

The Society of Military Ophthalmologists and the Society of Military Otolaryngologists will hold a joint stag dinner meeting at the time of the annual meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago in October.

Dinner will be served at 6:30 P.M. on October 16, 1956 at the Palmer House. The dinner will be followed by a short business meeting.

All members of the Society of Military Ophthalmologists and the Society of Military Otolaryngologists are invited to attend. Application may be made to either Captain James A Stokes, MC, Secretary-Treasurer, Society of Military Ophthalmologists, Eye Clinic, Walter Reed Army Hospital, Washington 12, D.C. or to Major Stanley H. Bear, MC, 3810th USAF Hospital, Maxwell Air Force Base, Alabama.

### MEETING

*The First International Congress of Neurological Sciences* will be held in Brussels, Belgium, July 21-28, 1957. This Congress is an affiliation, for the first time, of all independent international congresses of several neurological disciplines into a single integrated international convention.

The congresses scheduled to meet simultaneously in Brussels under the new coordinated program are: Sixth International Neurological Congress; Fourth International Congress of Electroencephalography and Clinical Neurophysiology; Third International Congress of Neuropathology; First International Congress of Neurological Surgery; Third meeting of the International League Against Epilepsy; and, Second Symposium Neuroradiologicum. The broad title of Congress of Neurological Sciences was adopted to allow for participation in future congresses of other neurologic disciplines,

such as neuroanatomy, neurochemistry, and neuropharmacology.

The scientific program of the International Congress of Neurological Sciences will highlight two major symposia of common interest to the Congress as a whole, and several symposia of special interest to the particular disciplines represented by each affiliate of the Congress, but which are pertinent to the interests of the entire Congress. In addition, arrangements have been made for the presentation of miscellaneous communications.

The two major symposia of common interest are: Extrapyramidal disease to be conducted by Professor Raymond Garcin of Paris and the Significance and Interpretation of Modifications of the Conscious State by Sir Geoffrey Jefferson of London. Among the symposia of special interest is one on Multiple Sclerosis under the Chairmanship of Professor H. Houston Merritt of New York, Vice-President of the United States Committee of the Sixth International Neurological Congress.

The organization of the First International Congress of Neurological Sciences is centralized under the direction of Professor P. van Gehuchten, and Dr. Ludo van Bogaert, president and secretary-general of the Belgian National Committee for the Sixth International Neurological Congress. . . . Appointed as official travel agencies are Thomas Cook and Sons, Inc., and the American Express Company.

As the program develops further information may be obtained from Dr. Pearce Bailey, Secretary, Committee for the United States of the Sixth International Neurological Congress, National Institutes of Health, Bethesda 14, Maryland.

#### PHOTOGRAPHY COURSE

*Photography in Medical Practice and Research* is a new course at the University of California. The first class will be held Thursday, September 20 at 7:30 P.M. at the Medical Center of the University in Los Angeles.

Further information may be obtained by addressing Thomas H. Sternberg, M.D., As-

sistant Dean for Postgraduate Medical Education, University of California, Los Angeles 24, Calif.

#### ENGLISH COURSE

Foreign physicians will have an opportunity to attend a new course in practical English this fall at New York University's Division of General Education.

Grant Taylor, director of the Division's English language program will conduct the class. Emphasis will be given to oral and written practice of the vocabulary commonly used in medical histories, consultations, evaluations, case reports, progress notes, and patient interviews.

It has been pointed out that at the present time, more than 30 per cent of all house staff physicians in New York, Ohio, and Illinois are aliens. In New Jersey the figure is 69 per cent.

Interested persons may register either by person or through the mail until October at the Division of General Education, New York University, 1 Washington Square North, New York 3, N.Y.

#### POSTGRADUATE COURSES

The American College of Physicians is scheduling a number of postgraduate courses in various cities during the months of October, November, and December. Information about these courses can be obtained by writing the Executive Offices of the College, 4200 Pine St., Philadelphia 4, Pa.

#### CERTIFICATION OF SANITARY ENGINEERS

The first application for certification in the field of sanitary engineering has been received by the American Sanitary Engineering Intersociety Board, Inc. (ASEIB) which maintains offices in the Engineering Societies Building, 33 West 29 St., New York 18, N.Y.

Prof. Earnest Boyce of the University of Michigan and chairman of the Board of Trustees of ASEIB has stated, "this marks the culmination of more than five years of planning and preparation. It also marks the

beginning of the first program of certification of special engineering knowledge in any of the several engineering specialities."

#### FEDERAL SANITARY ENGINEERS ELECT OFFICERS

The Conference of Federal Sanitary Engineers has elected the following officers for the year beginning June 1956:

Sanitary Engineer Director Gordon McCallum (USPHS), President, and Chairman of the Board; Ass't. Surgeon General Mark D. Hollis (USPHS), President-Elect; and Lt. Colonel Alvin F. Mayer, Jr. (USAF), Secretary-Treasurer.

The purpose of the Conference is to bring together engineers engaged in the sanitary engineering profession (including industrial hygiene), within the Federal government. There are now about 300 members. Any sanitary engineer who is a commissioned officer of the military services of the Public Health Service, or who is a civilian employee of any department or agency of the U. S. Government, is eligible for consideration for membership.

Information of all CFSE activities may be obtained from the Secretary-Treasurer, Lt. Col. Alvin F. Meyer, 1502 S. 9th St., Omaha 6, Neb.

#### FREE MANUAL

*Care and Sterilization of Surgeons' Gloves* is a free manual which can be obtained from The Wilson Rubber Co., Canton, Ohio.

#### CD MANUAL

Mortuary Services in Civil Defense (TM-11-12) is now available for sale by the Superintendent of Documents, U. S. Govt. Printing Office, Washington 25, D.C. Price 15¢.

#### HOSPITAL DISASTER PLAN

A fifty-page booklet has been prepared by the New York State Department of Health for assisting hospitals in preparing a plan for disasters. This booklet is copyrighted. Copies are available through the New York State Health Department, Albany 1, N.Y.

#### TO MONITOR RADIOACTIVE FALLOUT

"Spotters" of Great Britain's Royal Observer Corps are being trained not only in spotting airplanes but also in monitoring for radioactive fallout.

#### VAN METER PRIZE AWARD

The American Goiter Association offers the Van Meter Prize Award of \$300 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. Further information regarding the award may be obtained from Dr. John C. McClintock, 149½ Washington Ave., Albany 10, N.Y.

#### VISITS EUROPE



An exchange of ideas with European surgeons and English and German plants prompts the annual visit of Mr. Franklin I. Saemann to Europe. He is the president of the Orthopedic Equipment Company of Bourbon, Indiana.

Mr. and Mrs. Saemann flew to New York in their Cessna 195 on July 15, then took the K.L.M. Airline to Scotland. In Europe Mr. Saemann planned to visit Sir Reginald Watson-Jones and William Tucker, London; Professor Kuntscher, Germany; Professor Lorenz Bohler, Director of Hospital for Accidents and Professor of Surgery at the University of Vienna, and his associates, Professor Kroteschek and Dr. J. Bohler, son of the famous professor.

## VITAL STATISTICS BOOK

*Annual Epidemiological and Vital Statistics (1953)* is a 571-page book in English and French dealing with the vital statistics of nations of the world except Albania, Bulgaria, Red China, Czechoslovakia, Hungary, Liberia, Poland, Roumania, Saudi Arabia, USSR, and Yemen.

This is the sixth yearbook of epidemiological and vital statistics published by the World Health Organization.

For those interested in preventive medicine and vital statistics this book is a necessary addition to their libraries.

Copies of the book may be obtained from the Columbia University Press, International Document Service, 2960 Broadway, New York 27, N.Y. It is also obtainable in 46 other countries and the Section des Ventes, Palaides Nations, Geneva, Switzerland, for 30 Fr. s. or £ 2 10 s.

## DRUG STORE BUSINESS

In 1955 the total drug store business in the United States exceeded \$4,800,000,000—an all time record for the industry.

## SEAT BELTS

A really deluxe model automobile can keep you strapped without seat belts.—Harold Coffin, *Catholic Digest*.

## SOMETHING NEW

Certain types of *unbreakable laboratory ware* are now available. The equipment is

made of polyethylene resin. It is claimed that the equipment is as good as glass and virtually indestructible.

A new *C.R.P.A. Test Kit* (C-reactive protein antiserum) contains all the needs for 50-70 tests.

A new *blood bottle* has a sterile, vacuum pilot tube inside the bottle. This will prevent errors since the pilot tube can not be mislabeled, interchanged, lost or broken.

## Honor Roll

Since the publication of our last list, the following sponsored one or more applicants for membership in the Association:

Capt. Doris I. Billows, AMSC

Lt. Col. Ralph P. Campanale, USAF  
(MC)

Capt. R. F. Carmody, (MC), USN,  
Lt. William J. Cluster, (HS), USNR

Med. Dir. John W. Cronin, USPHS  
Rear Adm. W. Dana, (MC), USN,

Brig. Gen. Adio Freeman, MC, USA  
Maj. Gen. Alvin L. Gorby, MC, USA

Lt. Col. James F. Hammill, MC, USA  
Cdr. Harry Kaplan, DC, USNR

Col. Homan E. Leech, MC, USA  
Capt. Julian Love, USN, Ret.

Col. Karl D. MacMillan, MC, USA  
Lt. Col. Louis E. Mudgett, MSC, USA

Capt. Roger L. Rothrock, MSC, USAR  
Capt. W. P. Stevens, (MC), USN

Major Edward Tomsovic, MC, USA  
Major Harriet H. Werley, ANC



## Change in Constitution Proposed

To be acted on at the 63rd Annual Convention, November 12-14, 1956

AT THE business meeting of the 62nd Annual Convention of the Association of Military Surgeons of the United States, held November 9, 1955, the following resolution was passed:

"WHEREAS, Membership eligibility in the Association of Military Surgeons of the United States as now defined in the Constitution and By-Laws does not recognize personnel identified with either the Civil Defense Administration or Atomic Energy Commission,

"WHEREAS, These two agencies are attracting personnel in increasing numbers whose eligibility would not be questioned if they represented one of the recognized services,

"BE IT RESOLVED, That proper steps be taken to amend the Constitution and By-Laws so as to include personnel from these services who are otherwise eligible."

In accordance with the provisions of the Constitution of the Association the president appointed a committee to study the resolution and prepare the necessary amendment. The

committee presented the following proposed change to Section 4, Article III of the Constitution of the Association:

"The Secretary of Defense; the Secretary of the Department of Health, Education, and Welfare; the Secretary of the Army; the Secretary of the Navy; the Secretary of Air Force; and the Administrator of Veterans Affairs; the Chairman, Atomic Energy Commission; and the Director, Federal Civil Defense Administration; in conformity with the Act under which this Constitution is adopted, shall be ex officio members of the Association, while holding their respective offices."

After considerable discussion of the proposed change the Executive Council declared its opposition to any change in the constitution. It was the consensus of opinion that eligibility for membership already covers a wide field of interests including a large majority of the medical personnel of the Civil Defense Administration, and the Atomic Energy Commission, and any changes in the constitution are unnecessary.

## INFORMATION FOR AUTHORS

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**REPRINTS:** Reprints must be ordered when galley proof is returned by the author to the editor.

**ADDRESS:** Send manuscripts to the Editor, **MILITARY MEDICINE**, Suite 718, 1726 Eye Street, N.W., Washington 6, D.C.

## O B I T U A R I E S

### Capt. Helena Clearwater, U. S. Army, Ret.

Helena Clearwater, Captain, U. S. Army, Retired, died at her home in Kingston, N.Y., on May 16, 1956, at the age of 72.

Captain Clearwater was graduated from the Kingston Free Academy in June 1897 and became a teacher in the schools of her home city. In 1917 Captain Clearwater entered the U. S. Student Nurse Reserve. She was a member of the class graduated at the Army School of Nursing in January 1922. She was discharged from active duty until 1925. In 1944 she was discharged from the Army on physical disability.

### Capt. Williard E. Hodgkin, MC, USAR

Williard E. Hodgkin, Captain, Medical Corps, U. S. Army Reserve, died following a heart attack at Spokane, Washington, on June 4. He was 47 years old.

Dr. Hodgkin received his medical degree from the College of Medical Evangelists in Loma Linda, California in 1934. He began his medical practice at Kalispell, Montana, where he practiced five years before moving to Spokane in 1940. During World War II he served in the Army Medical Corps for two and a half years, part of which was in the European Theater. Following his Army service he took postgraduate work at Cook County Hospital in Chicago, and then resumed his practice at Spokane.

Dr. Hodgkin is survived by his wife, Dorothy, and two sons, Williard, Jr., and John, who live at 2611 West Liberty, Spokane.

### LCdr. Lewis E. Nichols, U. S. Navy, Ret.

Lewis Emanuel Nichols, MSC, U. S. Navy, Retired, died at his home in Alexandria, Virginia on July 2 at the age of 55.

He was a native of Georgia. In 1919 he enlisted in the Navy as a Hospital apprentice and was promoted through the various enlisted hospital corps ratings and appointed a Pharmacist on April 5, 1938. On January 7, 1946 he was promoted to the grade of lieutenant commander. After more than 30 years service he retired from active duty on September 1, 1949, but was recalled to active duty during the Korean conflict, and was again released to inactive duty on March 28, 1951.

He is survived by his wife, Charlotte; a daughter, Mrs. Audrey M. Mellott; and a son, Horace E. Nichols, a lieutenant in the Navy Supply Corps. Home address of the wife is: 109 East Oxford Ave., Alexandria, Va.

Interment was in Arlington National Cemetery.

### Lt. James J. Spring, U. S. Navy, Ret.

James J. Spring, Lieutenant, U. S. Navy, Retired, died at his home in Southern Pines, N.C., on July 10 at the age of 72.

He was a native of Massachusetts. He received his dental degree from the University of Pennsylvania in 1908. In 1918 he entered the Dental Corps of the Navy and served at the Naval Dispensary, Washington, D.C., and then in the First Naval District, later retiring from the Navy in 1922.

Dr. Spring is survived by his wife who resides at Country Club Drive, Southern Pines, N.C.

Interment was in Arlington Cemetery.

## Lt. Col. Pierre J. Rabil, MC, USAR

Pierre J. Rabil, Lieutenant Colonel, Medical Corps, U. S. Army, Reserve, died at Georgetown Hospital, Washington, D.C., July 23 at the age of 43.

Dr. Rabil was a native of Canada. He received his medical degree from the University of Montreal in 1938, and his Ph.D. from Georgetown University in 1954. He

was well known in the Washington area as a surgeon in the field of cardio-vascular surgery. He held a fellowship at the Georgetown University Medical Center. During World War II he served in Europe with the Army Medical Corps. He received the Bronze Star, Purple Heart, Croix de Guerre, and Legion of Honor.

Dr. Rabil is survived by his sister, Mrs. Jean Shelby and a brother, Emil Rabil, both of Goldsboro, N.C.

The news of the death of Colonel James C. Kimbrough, U. S. Army, Retired, at Walter Reed Army Hospital on August 19 was received too late for the formal obituary. That will appear in the October issue.



## N E W   B O O K S

*Hospitalization and Evacuation, Zone of Interior*, by Clarence McK. Smith. Superintendent of Documents, Government Printing Office, Washington, 25, D.C. Price \$4.00.

*Cryptococcosis*, by M. L. Littman, M.D., Ph.D., and Lorenz E. Zimmerman, M.D. Grune & Stratton, New York, N.Y. Price \$8.50.

*The Premarital Consultation. A Manual for Physicians*, by Abraham Stone, M.D. and Lena Levine, M.D. Grune & Stratton, New York, N.Y. Price \$3.00.

*The Treatment of Fractures*, Vol. I, by Lorenz Bohler, M.D. Grune & Stratton, Inc. New York, N.Y. Price \$24.50.

*The Drug Addict as a Patient*, by Marie Nyswander, M.D. Grune & Stratton, Inc. New York, N.Y. Price \$4.50.

*Proctology*, by Harry E. Bacon, M.D., Stuart T. Ross, M.D. and Portfrio Mayo Recio, M.D. J. B. Lippincott Co., Philadelphia, Pa. Price \$10.00.

*WHO: Annual Epidemiological and Vital Statistics, 1953*. Columbia University

Press, New York, N.Y. Price \$10.00. *Medical Effects of the Atomic Bomb in Japan*, edited by Ashley W. Oughterson, Clinical Prof. of Surgery, Yale Univ. School of Medicine, and Shields Warren, Pathologist, N.E. Deaconess Hospital. McGraw-Hill Book Co., New York, N.Y. Price \$8.00.

*Surgery of the Hand*, by Sterling Bunnell, M.D., Third Edition. J. B. Lippincott Co., Philadelphia, Pa. Price \$22.50.

*Rosenau Preventive Medicine and Hygiene*, by Kenneth F. Maxcy, M.D. Appleton-Century-Crofts, Inc., New York, N.Y. Price \$15.00.

*Williams Obstetrics*, by Nicholson J. Eastman. Appleton-Century-Crofts, Inc. New York, N.Y. Price \$14.00.

*Plastic Repair of Genito-Urinary Defects*, by George Bankoff, M.D. Philosophical Library, New York, N.Y. Price \$17.50.

*Military Heritage of America*, by Col. R. E. Dupuy, USA, Ret. and Col. T. N. Dupuy, U.S. Army. McGraw-Hill Book Co., New York, N.Y. Price \$10.00.

## BOOK REVIEWS

**CHRISTOPHER'S TEXTBOOK OF SURGERY.** 6th Ed. Edited by Loyal Davis, M.D., Chairman of the Department of Surgery, Northwestern University Medical School. 1484 pages, illustrated. W. B. Saunders Company, Philadelphia and London. 1956. Price \$15.50.

The eighty-seven contributors of this volume give a presentation of the leading surgical teachers of the nation and their teaching. Between the first chapter, "The History of Surgery" and the last chapter, "The Qualifications of a Surgeon," is a comprehensive, well organized, clearly presented text covering the embryology, pathology, diagnoses, treatment and prognosis of the problems of general surgery. The specialties of Eye, Ear, Nose and Throat, the vascular system, musculo-skeleton and nervous system are very adequately covered. Particularly noteworthy is the chapter on "The Breasts" by Ian Macdonald. In many instances the text is so up to date as to read like an authoritative article in a current journal.

The short biographical sketch of the contributors in the heading of each chapter is a welcome refinement. The format is in two column, decisive type with section headings of bold black print and the illustrations and figures are well related to the content.

This volume is truly a complete textbook of surgery for the student, intern, resident, practicing surgeon and the general practitioner. Were the reviewer's source of reference limited to but one book in surgery, this volume would be his choice.

CAPT. R. D. MUGRAGE, MC, USN

**CANCER THROUGH THE AGES THE EVOLUTION OF HOPE.** By Francelia Butler. 147 pages, illustrated. Virginia Press, Fairfax, Virginia. 1955. Price \$1.00.

Mrs. Butler is a free-lance writer who has concentrated on the field of medical history. In this little book, she has provided a readable, and it is to be hoped, a popular history of cancer, its ravages and triumphs, and its slow but inexorable retreat from the advances of medical research. A short history of this subject has been much needed for

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quite some time, and Mrs. Butler is to be commended for supplying it.

The chief defect of this book, and it is not a serious one, is that it consists of a series of reprints of articles contributed by the author to various magazines and newspapers over a period of years. Mrs. Butler would have been better advised to have taken this material, shaken it together, and have come out with a continuous narrative. Fragmentation is all right for reference, and for the patient in the waiting room, but for the serious reader it is a hurdle.

In the reviewer's opinion the best part of the book is what Mrs. Butler calls "Bibliographical Notes." The title is misleading, as it contains very little bibliography; instead the twenty-four pages of fine print are a mine of information on the history of cancer. The section is really superb.

This reviewer has two suggestions: one, that this book be widely distributed and read by doctors and the general public; two, that Mrs. Butler apply her considerable talents to writing a lengthier and more detailed history of mankind's curse, Cancer.

ROBERT WALKER DAVIS.

**SURGICAL DIAGNOSIS.** By Philip Thorek, M.D., F.A.C.S., F.I.C.S., Professor of Surgery, Cook County Graduate School of Medicine; Clinical Associate Professor of Surgery, University of Illinois, College of Medicine. 320 pages, 291 illustrations. J. B. Lippincott Company, Philadelphia and Montreal. 1956. Price \$12.

This book covers body regions from head to extremities by crisp, succinct informative text material augmented by very dynamic drawings which give the distinct feeling of motion or progression. The tendency to reduce symptoms or findings to "triads" and such similes as likening inguinal hernia to a pair of pants requiring seam-suture or defect-patch, favor easy mental retention. The book is readable, up to date, factual, condensed, and a valuable reference for students, interns, residents, general practitioners and teachers. It is highly recommended.

COL. WARNER F. BOWERS, MC, USA

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